FEEDSTUFFS

The Weekly Newspaper for the Feed Industry

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Industry Protests FDA Proposal on Trace Minerals

CHICAGO—Vigorous protests have been made by the feed industry against a Food and Drug Administration proposal to limit amounts of trace minerals in feeds, with additional specific restrictions on use of cobalt and zinc.

The protests have to do with an FDA-proposed list of trace mineral sources to be generally recognized as safe under the food additives amendment. (Feedstuffs, Jan. 9 and Jan. 16.)

In addition to listing minerals proposed to be recognized as safe, the FDA proposal specified certain limits on the minerals, plus restrictions on cobalt and zinc use.

In filing a strong protest with FDA, the American Feed Manufacturers Assn., Chicago, said that the FDA proposal to specify limits on amounts of all trace minerals and to restrict cobalt and zinc use has met with "unanimous opposition" from feed manufacturers and trace mineral suppliers.

In addition to the official AFMA protest, many protests have been filed by individual companies, the National Feed Ingredients Assn. and leading nutritionists outside industry.

Delay Seen

In view of these protests plus recent personal contacts with FDA officials, it is believed that the proposal will receive further attention before any final action is taken, said W. E. Glennon, AFMA president.

The FDA proposal was published in the Federal Register Dec. 31, and of-

(Turn to INDUSTRY PROTESTS, page 8)

Official Forecasts Lower Rates Under Storage Agreement

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Lower grain storage rates and increased warehouseman responsibility were forecast this week when Clarence Palmby, associate director, Commodity Stabilization Service, appeared before the House sub-committee on governmental operations under L. H. Fountain (D., N.C.), chairman.

The Fountain committee belatedly is getting into the act of investigating grain storage costs, which was originated by the Stuart Symington committee of the Senate Agriculture Committee. The Fountain committee is going over old ground which already has been well plowed by the Senate investigatory committee.

Distinct Difference

There is one distinct difference, however, between the approaches of the Symington group and the group

(Turn to STORAGE, page 8)

Credit to Limit Poultry Output, S.E. Group Told

By ROBERT HARRISON and PAUL ANDERSON
Feedstuffs Staff

ATLANTA—Production of poultry will be limited in 1960 by tighter credit, bringing better prices for those who continue in the business.

This was one of the predictions on poultry industry developments made by speakers who addressed the annual Southeastern Poultry & Egg Assn. here this week.

The speaker who discussed credit conditions was Dr. Robert L. Dince, University of Georgia economist who had made a special credit study.

Dr. Dince said that the credit situation would not be alleviated in the near future. Also, he pointed out that the poultry industry on the whole is under-capitalized and compares unfavorably with other borrowers.

Other speakers discussed business management, costs and other subjects related to the broiler, egg and turkey industries. Considerable emphasis was given to the need for better management and cost control. Predictions of major industry developments also were a feature of the talks.

Attendance at the big convention and exhibit was about 5,600—somewhat less than expected. Rain was said to have cut into attendance, but this failed to dampen over-all interest and enthusiasm.

In looking at future developments, one speaker saw a continuance toward contracting for specialized egg market outlets and predicted that egg production would continue to become centralized into "egg sheds."

So far as turkeys are concerned, it was forecast that important turkey areas would move toward a high degree of coordination among all phases of the industry.

Although there was some optimism regarding the broiler picture, convention conversations indicated that egg producers were in a different mood. Many expressed the need for price boosts, and some were said to be "just broke."

The broiler optimism was tempered somewhat, with some feeling that the favorable situation may deteriorate within about six months. Tighter credit is limiting production and creating higher prices at present. Some of the feed men present expressed concern about the FDA requirement that certain medications be withdrawn from formulas at a specified time before the birds are processed.

(Turn to SOUTHEAST, page 100)

House Unit Gets Proposals For Delaney Clause Changes

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—The Secretary of Health, Education and Welfare this week told a congressional group of his previously reported proposals for changes in the Delaney clause of the food additives amendment to the food and drug law.

One of these changes presumably would result in removing the current restrictions in connection with the use of stilbestrol in feed.

Statements by the secretary, Arthur S. Flemming, came at a House committee hearing.

The House Interstate and Foreign Commerce Committee opened its hearings on a proposed amendment to the food and drug law in regard to pre-testing of color additives used in food and the establishment of tolerances. As the hearing opened, Mr. Flemming urged that the Delaney amendment now applicable in the food additive provisions of the law be incorporated in the color additive amendment and that it in turn be further modified.

Secretary Flemming asked the committee to amend the law to strike out the so-called "grandfather" clause which permits previously cleared use of suspected carcinogens in feeds but denies new uses. He asserted that this provision of the law creates an inequity as applied to feed industry

(Turn to DELANEY CLAUSE, page 97)

Pinch in Feed Credit at Retail Level Revealed at Midwest Conference

By MARTIN E. NEWELL
Feedstuffs Staff

KANSAS CITY—There is a pinch in feed credit—at the retail level at least—in many sections of the Middle West, it was revealed at the Farm Supply Credit Men's Conference in Kansas City, Jan. 26.

The retail feed store and local mixer find their accounts receivable are growing and a higher percentage past due than any time in recent years. As a result, dealers are tightening up on their credit policies.

The cause of lagging payments, besides the generally lower level of farm income, appears to be associated primarily with local and area situations. The slow-pay situation varies considerably throughout the middle west, some sections being much worse than others.

At the meeting this week it was brought out that the worst areas from the credit standpoint right now are the range from northern Missouri to Iowa, particularly the southern part of the state, plus the eastern third of Kansas. Wyoming and the parts of Colorado dependent on sugar beets also are depressed credit areas, and another slow section is the delta cotton areas along the Mississippi.

The Missouri-Iowa problem was said to be due primarily to a wet corn harvest, which made it impossible for many farmers to get government loans on their corn. Also contributing to the situation have been falling

(Turn to CREDIT PINCH, page 97)

FEEDSTUFFS *Features This Week*

SPECIAL ALFALFA SECTION—A special section, pages 17-24, devoted to the alfalfa dehydrating industry, features articles on research and industry developments.

LAYER OPERATION—A Pennsylvania feed dealer describes his 5,200-cage layer operation in an article on page 30.

NEW MILL—A report on a new Iowa mill, operated by two men and capable of making all types of feed, including ruminant pellets, appears on page 38.

FEEDING IN SOUTHWEST—Increased feed grain production and cattle feeding in the Southwest are discussed on page 44.

HOG CONTRACTS—Four types of hog finishing contracts in Indiana are described on page 82.

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Broiler Promotion Program Aimed at Regaining Demand

ATLANTA—The National Broiler Council's board of directors this week announced a revised and vitalized broiler-selling plan and asked the council's executive committee to appoint a special group to put the plan into action by March 1. The plan entails a new processor set-aside program, seeks an operational fund minimum of $1 million and embraces two basic policy changes.

The directors held a meeting in connection with the Southeastern Poultry & Egg Assn. convention here.

The new selling effort is aimed primarily at regaining consumer confidence and demand. This goal is to be accomplished through the compilation of practical and usable market data from research projects, the development of sales aids for processors and retailers, the creation of intensified publicity and consumer information and the expansion of effort in major advertising campaigns.

The concentration of fund collecting at the processor level was seen

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ABC AUDITED PAID CIRCULATION — NBP

The regional circulation of this issue is concentrated in the northwestern states

Top of the Hopper

THE EXPERIENCE OF ONE feed manufacturing concern that got caught up in a feed inspection technicality may serve as a warning to others and also illustrate the need for some updating of feed control practices to meet modern feed formulation methods.

Nutrena Mills, Inc., recently had its license to sell feed in Georgia suspended for 15 days because certain ingredients listed on the tag were not found in samples of the feed, a violation of Georgia law. The violation, however, was purely a technical one, as Nutrena officials testified at the hearing preceding the suspension.

The missing ingredients were trace amounts of barley and oats, intended to be included in the finished feed only to meet the labeling requirements and not for any significant nutritional purpose. It was admitted they were left out through inadvertence, and it was pointed out that failure to include these trace amounts of grain in no way impaired the quality of the feed. Also, examination of the samples by state analysts did not reveal any circumstances justifying the conclusion that the feed did not meet the highest standards of quality, Nutrena officials pointed out.

It was explained that through the use of IBM equipment and linear programming, Nutrena is able to evaluate more ingredients than is possible through any other method of formulation. This permits a great degree of accuracy and efficiency in selecting the most economical combination of ingredients required to produce feed containing desired nutritional quality, Georgia officials were told.

BECAUSE INGREDIENT PRICES CHANGE, formulas change. "Were we to list on our tags only the ingredients called for by our formulas, it would be necessary for us to print, have approved and maintain more than 40,000 different tags—a practical impossibility," Nutrena points out. "To avoid this and still comply with Geoorgia law, Nutrena and other feed companies using advanced techniques in formulating feeds have adopted the practice of using a single tag listing all possible ingredients and including in each mix trace amounts of each ingredient shown on the tag, whether or not they are required to meet the quality standards set for the feed."

A slip occurred in this instance in not including two of the ingredients listed. However, it is also pointed out that it is not always possible to establish by microscopic examination that trace amounts of some ingredients are in a feed.

At the time the suspension was invoked, Nutrena sent a letter to its customers in Georgia over the signature of E. C. Fuller, executive vice president, explaining the situation much as it is described here. The letter did not, as a newspaper story reporting the end of the suspension states, deny the mislabeling charge.

Mr. Fuller's letter concludes: "If our experience serves to bring to the attention of the public the fact that feed laws have lagged behind the technology of modern feed formulation, we feel that this inconvenience is justified."

It is understood that steps are being taken to amend feed regulations in some states so that tags may include "either/or" designations for some ingredients. This would permit flexibility in use of ingredients, when economy to the feeder dictates such changes, without the necessity for including small amounts of all ingredients even though they may not be needed and without the risk of facing a technical labeling violation because some trace of an ingredient cannot be detected in a feed.

More sensible labeling requirements would not only make it easier for

(Turn to TOP OF THE HOPPER, page 97)

How's Business?

AN EVERY WEEK REVIEW OF FORMULA FEED BUSINESS VOLUME, INCLUDING PRICE, SUPPLY AND DEMAND TRENDS

This week's formula feed business lagged behind expected volume in most regions. Sales action has been a disappointment. All lines of feed seem to be affected. Beef cattle and dairy feeds still account for a big share of sales, but even these are losing some of their spark. Hog feed volume movement remains slow, but there are signs that recent gains for producers in hog prices might have an outside chance of improving demand. Some improvement in broiler prices has been noted. Low egg prices remain a burden on feed manufacturers. The U.S. Department of Agriculture reports that feeders are confining purchases to nearby needs and are using liberal supplies of home grown feeds, with concentrates, to balance out protein requirements. The ingredient market was quite dull this week. Just about every item was either steady or lower in price. (Feed markets in detail on pages 98-100.)

Northwest

When feed manufacturers in this region were asked, "How's business?" this week their answers fit into a general category of "slow." But differences in the degree of this slowness turned up in their answers.

While, generally, current feed business this week is considered no better than even with last week and the same week a year ago, there were enough clues provided by the formula feed men that for some there is a tendency for a decline in tonnage.

Manufacturers agree that beef cattle and dairy feeds still sit in the throne as king and queen of the prime movers, but there was no straight line of thought on whether the recent improvement in live hog prices had yet filtered down to have any influence on feeding practices of the producers. Reactions ranged from no effect at all to a definite influence in the direction of greater movement of hog feeds.

A certainty is that poultry feeds have not yet shown any brightness, but some manufacturers believe new crops of layers and meat birds and an expected increase in starter feeds for turkeys will spark a gain in volume sometime in February.

Northeast

Sales of formula feeds were none too robust this week and little improvement is expected next week. Some mixers are trimming their inventories in line with the lessened demand. However, it was felt that bran and middlings may have bottomed out and some are showing an interest in their February requirements.

Dairy concentrates to mix on the farm continued to lead in sales turnover, with no switch as yet to complete feeds. Egg mashes ranked second and broiler feed demand was just so-so. Demand for starter feeds hasn't yet got underway.

Broilers remained the high spot of the end products. Prices in the East ranged from 18 to 20.70¢ lb. With a break even point of slightly under 15¢ lb., growers said they can make a profit at these levels.

Eggs, however, continued depressed, with retail prices of Grade A eggs as low as 39¢ doz.

Ingredients were mostly on the downside during the week.

Southeast

Feed business in the Southeast is reported as being about unchanged. Most mills report their running time as about normal.

Southeastern broiler producers continue to increase their chick placements each week. As a comparison, Georgia alone, in the week ending Dec. 26, placed 4,824,000 against 6,319,000 for the week ending Jan. 16. Some are fearful that the continued increase in placements may result in over-production, but on the whole, most of the producers are very optimistic and feel that prices will remain at their present level or show a slight increase.

Current sales are being made between 1½ and 18¢ lb. f.o.b. the farm, affording producers a fair profit.

Feed ingredient buyers continue to buy their major proteins on an as-needed basis.

The recent cold spell in Florida killed most of the pastures, which stimulated a better demand for roughage feeds.

Central States

Formula feed trade in the Chicago area this closing week of the first month of the year followed the same sort of pattern that characterized its action during the fore and middle portions of the period. Demand for commercial mixed feeds has been anything but brisk and mills have been practically unanimous in reporting that the month as a whole has been a disappointment from the standpoint of sales volume.

While some of the plants have been able to operate on a full 40-hour week, the majority of them have been curtailing operations in order to keep production in step with demand. Many plants have been on a four-day week, which is not the usual pattern for a normal January.

The let-down in demand appears to have extended to just about all lines —cattle, hog and poultry feeds. Prices have been cut to some extent, and, as often happens under such circumstances, reducing quotations does not seem to have broadened demand. As a matter of fact, some in the trade seem to feel that, if anything, lower prices have tended to discourage buying power instead of stimulating it.

South Central

Feed demand is rather quiet this week. Most firms are doing about the same amount of business that they did during the week earlier. Running time, at most mills, continues a little short of five full days. The recent cold weather apparently failed to have much effect upon feed demand.

Hog and cattle feeds are moving fairly well, but some complaints are heard that cattle feeds should be doing even better. January applications against bookings are lighter than anticipated when the bookings were entered and there still is a substantial amount left to be taken out. With expiration date only a few weeks away, deliveries will have to be stepped up sharply for the bookings to be completed on time.

Ohio Valley

Near zero temperatures in the Ohio Valley for several days recently gave

(Turn to MARKETS, page 103)

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Predicted 6% Turkey Crop Gain Near Increase Expected by Some

WASHINGTON — The 6% larger turkey crop the U.S. Department of Agriculture says growers will produce this year amounts to about the same increase over 1959 predicted by some persons in the industry earlier this year.

As 1960 neared, there existed in some corners the belief that this year's crop would be up to 5% greater than 1959's, while others looked for little or no gain because of reports saying a significant number of birds held for breeding were sold when prices gained several cents late in the year. This and disease problems were mentioned as factors which might help hold down the 1960 turkey crop. Reports on breeding hen numbers also were mentioned.

It appears that those who looked for a larger crop in 1960 that might have the tendency to keep turkey prices from rising above 1959 levels were on the right track.

Variation Possible

USDA says the number of turkeys actually raised in 1960 may vary from Jan. 1 intentions, the difference depending on growers' reaction to price of feed, supply and price of hatching eggs and poults and prices received for turkeys remaining in growers' hands. It is said, however, that USDA's predicted increase of 6% can be considered as fairly accurate. The 5% increase in total turkeys raised from 1958 to 1959 was the same as reported intentions on Jan. 1, 1959, indicated.

USDA has reasoned that the 1960 crop is likely to set a new record because of improvements in turkey prices. Turkey prices rose sharply in November and December. Early January live prices at the farm were probably the highest since mid-1956.

USDA says turkey slaughter in the first six months of this year will be seasonally light and turkey prices are likely to remain firm until about mid-year. After that point, however, current slaughter is expected to exceed current consumption, "and the excess will, as usual, go into storage for use during the holidays and later."

If growers carry out their intentions, about 87 million turkeys will be raised this year, compared with 82 million last year. This anticipated turkey crop will be composed of more heavy breeds and fewer light breeds than the 1959 crop, according to USDA, which reported that an increase of 12% is planned for the heavies and a cut of 18% is expected in lights. Intentions indicate that heavy white production will leap 21% and the crop of other heavy breeds will be 8% greater. (Also see table.)

The predicted crop would include roughly 74,213,000 heavy breed turkeys and 12,621,000 light breed birds.

All regions plan increases except the north Atlantic and south Atlantic regions. Increases indicated are 12% in the west north central and western states, 8% in the east north central and 1% in the south central states. These increases, says USDA, are partially offset by the intended reductions of 14% in the south Atlantic and 4% in the north Atlantic regions.

According to present plans, heavy white breeds will account for 30% of all heavies raised in 1960, compared with 28% in 1959. The expected number of heavy whites to be raised in 1960 is above last year in all regions except the north Atlantic.

USDA reports that growers plan to raise 52,189,000 bronze and other heavy breed turkeys in 1960, compared with 48,156,000 last year. All regions, except the south Atlantic, expect to increase production of these breeds.

Intentions to Raise Turkeys in 1960

State and division	Number raised in 1959 1/			Intended for raising in 1960			Total turkeys 1960 as % of 1959
	Heavy breeds	Light breeds	Total	Heavy breeds	Light breeds	Total	
	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Percent
Maine	62	2	64	56	1	57	89
N.H.	122	1	123	126	1	127	103
Vt.	52	0	52	32	0	32	62
Mass.	434	8	442	414	6	420	95
R.I.	26	2	28	26	1	27	96
Conn.	234	2	236	222	2	224	95
N.Y.	550	9	559	446	7	453	81
N.J.	150	13	163	150	13	163	100
Pa.	1,194	94	1,288	1,233	89	1,322	103
N.Atl.	2,824	131	2,955	2,705	120	2,825	96
Ohio	1,935	1,123	3,058	2,205	955	3,160	103
Ind.	2,139	655	2,794	2,432	675	3,107	111
Ill.	963	120	1,083	1,014	90	1,104	102
Mich.	690	200	890	735	100	835	94
Wis.	3,788	128	3,916	4,277	189	4,466	114
E.N.Cent.	9,515	2,226	11,741	10,683	2,009	12,672	108
Minn.	11,847	1,649	13,496	14,165	1,451	15,616	116
Iowa	6,696	1,373	8,029	7,837	1,236	9,073	113
Mo.	3,087	424	3,511	3,214	276	3,490	99
N.Dak.	800	19	819	883	18	901	110
S.Dak.	729	68	797	756	75	831	104
Nebr.	1,016	40	1,056	1,102	24	1,126	107
Kans.	698	80	778	769	48	817	105
W.N.Cent	24,833	3,653	28,486	28,726	3,128	31,854	112
Del.	128	364	492	152	382	534	109
Md.	200	43	243	168	36	204	84
Va.	1,602	5,133	6,735	1,679	3,850	5,529	82
W.Va.	266	834	1,100	276	517	793	72
N.C.	1,504	214	1,718	1,545	193	1,738	101
S.C.	807	42	849	860	30	890	105
Ga.	280	4	284	286	10	296	104
Fla.	180	212	392	52	180	232	59
S.Atl.	4,967	6,846	11,813	5,018	5,198	10,216	86
Ky.	380	16	396	409	14	423	107
Tenn.	91	36	127	111	36	147	116
Ala.	139	57	196	145	53	198	101
Miss.	177	71	248	170	10	180	73
Ark.	1,459	303	1,762	1,806	303	2,109	120
La.	31	0	31	25	0	25	81
Okla.	866	127	993	875	76	951	96
Texas	3,050	675	3,725	3,050	479	3,529	95
S.Cent.	6,193	1,285	7,478	6,591	971	7,562	101
Mont.	23	3	26	23	2	25	96
Idaho	199	41	240	249	58	307	128
Wyo.	4	1	5	5	1	6	120
Colo.	1,352	14	1,366	1,620	14	1,634	120
N.Mex.	63	5	68	63	5	68	100
Ariz.	103	0	103	113	0	113	110
Utah	2,384	337	2,721	2,623	357	2,980	110
Nev.	1	0	1	1	0	1	100
Wash.	546	14	560	481	12	493	88
Oreg.	1,248	243	1,491	1,373	292	1,665	112
Calif.	12,172	649	12,821	13,959	454	14,413	112
West.	18,095	1,307	19,402	20,510	1,195	21,705	112
U.S.	66,427	15,448	81,875	74,213	12,621	86,834	106

1/ Preliminary.

Antibiotic Product For Silage Announced

NEW YORK — Commercial Solvents Corp. this week reported "a major new use for antibiotics"—the preservation of forage. The company announced a new product called "Silotracin," for preventing spoilage of silage.

The active ingredient of Silotracin is the antibiotic zinc bacitracin.

I. Roy Cohen, manager of Commercial Solvents' department of animal nutrition, said that this is the first time that an antibiotic used for human and animal health also has found application in the preservation of harvested forage crops.

Silotracin was developed at CSC's research center in Terre Haute, Ind. For the past three years, it was noted, the antibiotic has undergone extensive field testing.

"Experiments at a number of colleges and experiment stations," Mr. Cohen said, "have shown that the addition of Silotracin in small quantities to the contents of farm silos insures palatable preservation of silage, particularly grass silage, by selectively discouraging the bacteria which make poor quality silage, and by encouraging the bacterial action which preserves silage nutritional value. When the treated feed is removed from the silo, no trace of the antibiotic remains."

Silotracin is added at a rate of 5 lb. per ton of silage.

The new product is described as non-corrosive, not requiring special handling and easily distributed throughout the forage by the farmer.

The announcement quotes Dr. L. L. Rusoff of Louisiana State University, who conducted some of the Silotracin studies, as explaining that the cause of silage spoilage is a lack of chemical sugars and slow fermentation of a silo's contents. Protein-splitting bacteria get the upper hand, causing nutritional quality of silage to be reduced. Odor and taste then become offensive. Most of this damage, according to Dr. Rusoff, starts within the first 72 hours of silage storage. The zinc bacitracin, it is said, blocks this damage and permits beneficial bacteria to preserve the nutritional elements. CSC said college work also has indicated that treated silage has greater digestibility, the reason seeming to be that the antibiotic hastens the breakdown of cellulose.

Mr. Cohen said that "so far, Silotracin's effectiveness has been proven with alfalfa, brome grass-alfalfa mixtures, Johnson grass, clover, millet, oats and Bermuda grass. Corn and sorghum silage has also been made, and results of feeding will soon be available." Upright and bunker silos of various types were used in the experiments.

Montana Nutrition Meeting Feb. 8-9

BOZEMAN, MONT. — A program dealing with recent developments in livestock nutrition will be presented Feb. 8-9 at the 11th annual Nutrition Conference to be held at Montana State College.

Among the topics to be discussed will be pelleting and various additives.

Dr. Robert M. Jordan, University of Minnesota, St. Paul, will open the program with a talk on "Creep Feeding Lambs." Dr. K. J. Goering, of the host college, will follow with "Mustard and Rape Seed Oil Meal II —Further Studies on Their Potential as Protein Sources."

Two talks will close out the morning program. Dr. William E. Dinusson, North Dakota Agricultural College, Fargo, N.D., will speak on "Pigs and Pellets," and John Marchello of Montana State will talk on "Wheat

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Tomorrow's Feed To Be Topic at Midwest Meeting

KANSAS CITY — What will the formula feeds of tomorrow be like?

That's the question that some of the nation's foremost nutrition authorities will attempt to answer at the opening session of the Midwest Feed Manufacturers Assn. convention in Kansas City Feb. 8-9.

Dr. W. M. Beeson, Purdue University, will examine the question from the beef cattle standpoint; Dr. J. R. Couch, Texas A&M College, will look at poultry rations, and Dr. D. V. Catron, Iowa State University, will discuss swine formulas. Eugene H. Spitzer, Murphy Products Co., Burlington, Wis., will moderate the panel.

Closely related to the question of what will be in tomorrow's feeds is the problem of what can be put in these feeds according to government regulations. Dr. Ralph Kneeland, Jr., Food and Drug Administration, Washington, will discuss government regulations.

Questions from the feed industry for the nutritionists and the government specialist will be raised by E. C. (Al) Fuller, Nutrena Mills, Minneapolis, and Dr. J. L. Krider, McMillen Feed Mills, Fort Wayne, Ind.

Dr. Couch has made statements that tomorrow's formulas may be very largely concentrates, with the feed mixed closer to the point where the feed is consumed. He is expected to enlarge upon these statements during his part of the program.

The status of feed additives for beef cattle rations is expected to be examined by Dr. Beeson. Antibiotics, tranquilizers, enzymes, hormones, amino acids and others will be included in the report.

In the afternoon of the first day, an informal discussion is being planned with the topic: "Can the Midwest Stay in the Poultry Business?" Moderated by Phil Evans, a Kansas City radio farm director, the panel will be made up of experts from various segments of the poultry industry.

Members of the panel will be Don Turnbull, American Poultry & Hatchery Federation, Kansas City; Bill Parmalee, Mel Miller & Co., Kansas City, and Dr. E. M. Funk, University of Missouri, Columbia.

SHRIMP JAMBOREE AT MIDWEST MEETING

KANSAS CITY—For the first time, an informal "Spiced Shrimp and Beer Jamboree" will replace the traditional formal banquet at the annual convention of the Midwest Feed Manufacturers Assn., according to Lloyd Larson, executive vice president of the association.

This informal supper party will take place on the evening of Monday, Feb. 8. The 16th annual Midwest convention is being held at the Muehlebach Hotel here.

"We polled our members on this last year," Mr. Larson said, "and the overwhelming majority said they would prefer a friendly gathering of this kind to the traditional banquet with a formal program."

Wallace Quinn, president of Quinn Menhaden Fisheries, Inc., is having about 200 lb. of gulf shrimp shipped from New Orleans especially for this event to augment the supply from regular sources. All registrants and their wives are invited to attend.

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Some say the expression originated with fishermen who turned over stones on the beach in their search for crabs. Others explain its origin this way: After the Greeks defeated the Persians in a battle in the 5th century B. C., rumor circulated that the defeated Persian general had buried some treasure on the battleground. When asked how the treasure might be located, the Oracle of Delphi replied, "Leave no stone unturned." At any rate, the expression has come to be applied to one who takes every possible means and spares no effort in trying to accomplish an aim.

Since the day the industry began, the makers of Small's Dehydrated Alfalfa have "left no stone unturned" to provide the finest product possible—uniform in grade, consistent in color, and available whenever and wherever needed. That's why Small's Dehydrated Alfalfa has been, since the day the industry began, the standard of excellence by which all others are judged.

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FOR FEEDS WITH A FUTURE

Small's dehydrated alfalfa

Report from Indiana Convention

Caution in Credit Use Advised; Grain Banks, UGSA Discussed

By DON E. ROGERS
Feedstuffs Staff

INDIANAPOLIS, IND. — Using credit only when it can help improve sales and profits was one of the advisory suggestions given the 600-700 delegates and guests who attended the Jan. 17-19 convention of the Indiana Grain & Feed Dealers Assn. here in the Claypool Hotel.

(A report on the election of officers and directors at this convention appear on page 4 of the Jan. 23 issue of Feedstuffs.)

Grain banks were cited as an "effective merchandising arrangement for many feed dealers"; the present status of feed additives for beef cattle was reviewed; opinions concerning proposed changes in the Uniform Grain Storage Agreement were expressed, and other subjects of interest to grain and feed men were given a prominent spot in the convention's program.

RETAIL CREDIT—A dealer who faces the decision of whether he should offer credit to his customers should base his choice on what he can expect in the form of additional sales, profits and better business operation—"not just for the sake of doing it," advised William E. Breese, associate chairman, department of commerce, extension division, University of Wisconsin, Milwaukee branch.

Standing beside a drawing of a burro pulling a cart, which he used to illustrate the points made in his talk, Mr. Breese commented, "To have a cart that will go over the road to success you need a strong wheel. To have a strong wheel you must have good spokes and a good hub." He said the hub of this wheel is "management." Its spokes are "credit," "retail" and "boom or bust."

Mr. Breese said one must have good control to extend credit. "To assure efficient operation it is necessary to measure and control a number of factors," he said. "These factors are: Credit limits, collections and credit sales."

A dealer should be able to ascertain if credit extension has been beneficial to him. "It is my firm belief that non-recovery of business costs will lead to financial distress and even business failure," he said. "Therefore, you should know if your credit operation is holding its own. The records you keep will help you control, measure, plan, change, organize and see opportunity."

Indexes

Indexes a dealer can use in his credit operation, as listed by Mr. Breese, include: Rejection percentages, trend in number of accounts, change in credit sales volumes, ratio of credit sales volume to total sales, change in accounts receivable outstanding, ratio of inactive accounts to total accounts, ratio of turnover of customers.

Collection control indexes: Collection percentages, changes in volume of collections, delinquency percentage, age of receivables and bad debt losses.

"Your collection policy should be one that will continue prompt payment," Mr. Breese emphasized. "Slow collections will add to your expense of operation rather than help you receive higher profits."

Relative to the "retail" spoke, Mr. Breese commented, "The relations you have with your customer start at the point of extending credit. When you agree to extend credit after investigation, talk with the customer and impress him with the importance of prompt pay."

He said a feed dealer can have a boom or bust depending on how he handles his credit department. "While poor handling of credit extension can be costly, good handling of your credit operation can be a sales builder," he said.

GRAIN BANK COST CONSIDERATION—"Grain banks have developed into effective merchandising arrangements for many feed dealers," said Dr. W. S. Farris, Purdue agricultural economist. "The reason why the grain bank was not just a passing fad is that it saves time and adds convenience in a farmer's feeding operations. There is also the possibility of saving a few cents per bushel in handling, processing and feeding grain, but this does not appear to be the advantages most appreciated by farmers. Feed dealers have rapidly adjusted to the changing needs of their feed customers and have 'tooled-up' to provide the improved service connected with grain bank operations."

Still Some Problems

The rapid increase in the number of grain bank arrangements has filled many new demands of customers but some problems are still connected with the grain bank, according to Dr. Farris.

The need for additional storage space has been highlighted by large crops and faster harvesting methods, he said. Many farmers, apparently, would rather secure commercial storage for their feed needs than to replace old storage facilities or expand facilities. Some feed dealers are able to work out arrangements with customers to hold a large part of corn on the farm and deliver it on call to the feed mill.

"Arrangements like this minimize the storage problem, but do not solve it," he said. "Consequently the pressure is still on to build new storage to take care of grain bank needs."

How much should be charged for corn stored in a grain bank? There is no single best answer in the opinion of Dr. Farris. Many feed dealers do not make a direct charge, even though all recognize that storage is not a costless process.

Dr. Farris reported that a survey of Indiana grain bank operations in November, 1958, indicated that only one fifth of the grain bank dealers made a direct storage charge. The most usual charge observed was 1½¢ bu. per month. More recent observations indicate that more than one

(Turn to INDIANA, page 102)

CHICKEN PULLORUM DISEASE TESTING OFF

WASHINGTON — Fewer chickens were tested for pullorum disease during December, 1959, than in December, 1958, according to the U.S. Department of Agriculture.

The number of chickens for supplying broiler hatching eggs tested took the biggest percentage drop, more than twice that of chickens for other purposes.

The number of chickens for supplying broiler hatching eggs tested during December totaled 2,484,566—down 11% from December, 1958. Testings July through December, 1959, totaled 13,877,195—down 6% from the testings during this period in 1958, says the Crop Reporting Board.

The testings of chickens for other purposes (egg-type) during December, 1959, totaled 2,378,583, compared with 2,497,300 in December, 1958—a decrease of 5%. The number tested July through December totaled 8,389,790—down 13% from the same period in 1958.

Bryce Rhodes B. G. Sanders

New Feed Phosphate Plant to Open in West

BUTTE, MONT. — Newly - formed Rocky Mountain Phosphates, Inc., will begin production of a defluorinated phosphate for animal feeds here in March.

The new corporation will be one of four producers of defluorinated phosphates in the U.S., and the first producer in the West, the announcement said.

Rocky Mountain Phosphates has signed a long term lease for the facilities of the Domestic Manganese Corp. of Butte, Mont.

The major stockholders of the new corporation are also its officers. Bryce Rhodes, president, has announced that Benjamin G. Sanders has joined him as a partner in the corporation and will serve as vice president. Mr. Rhodes and Mr. Sanders were formerly with International Minerals & Chemical Corp. Nimrod Fee, Deer Lodge, Mont., will serve as treasurer.

According to Mr. Rhodes, the plant was formerly used for the roasting of manganese ore. Its facilities and existing equipment are "ideal for the manufacture of defluorinated phosphate," he said. The construction of bulk and bagged loading facilities and other necessary modifications are now underway and are expected to be completed by March.

Mr. Rhodes said the plant is capable of producing 5,000 tons of defluorinated phosphate per month.

Mr. Sanders, who will manage the sale of the new feed phosphate, said, "A feed phosphate plant is needed to serve the western feed manufacturer. The West has all the raw materials from which a defluorinated phosphate of high quality can be manufactured. Our plant will use western raw materials and will serve the western feed manufacturer."

The new product will be sold under the trade name, "Phosfeed." It will contain 18% phosphorus, 32% calcium and less than .18% fluorine.

Agricultural Sales Head Named by Nopco

NEWARK, N.J.—Dr. Melvin Hochberg, vice president in charge of Nopco Chemical Co.'s fine chemicals division, has announced the appointment of Robert T. Whelan as sales manager of the division's agricultural department.

R. T. Whelan

Mr. Whelan's appointment coincides with the expanded research and development program under way in the fine chemicals division, Dr. Hochberg said. Mr. Whelan will be responsible for the supervision and coordination of Nopco agricultural sales throughout the U.S. and Canada.

Mr. Whelan, a Colgate University graduate, has been with Nopco since 1936 and has served as district sales manager and regional sales manager in the north and southeast areas. Most recently, he has been manager of agricultural sales in the Midwest. He will move his headquarters from Kansas City, Mo., to Nopco's main offices in Newark, N.J.

Feed Ingredient Movement Dull

Feed ingredient trading was dull this week. Almost without exception, average prices of ingredients at principal markets, as reported by the U.S. Department of Agriculture, were steady to lower. USDA said that for the week ended Jan. 26 the index of weighted prices for all feedstuffs, compared with the previous week, dropped 2 points.

An abundant supply of soybean meal was reported at the end of the reporting week and prices averaged lower. Linseed meal values were unchanged. Buying interest was very light and trading slow.

Although production of wheat millfeeds by the nation's mills was down slightly and totaled 97,100 tons for the week, demand was considerably slower than it has been and prices were off, particularly for middlings and shorts.

USDA said most dealers in animal protein feeds said this week's trade was almost a duplication of last week, but a weakening trend was entering the picture as the end of the reporting week neared.

Molasses, following the trend of competing ingredients, was adjusted downward—one of the few price alterations seen in many months.

Gluten meal advanced, but this price elevation was due to lighter supplies, not any increased buying.

Lagging feed ingredient movement was attributed to the response of formula feed manufacturers to feeders confining purchases to nearby needs and using liberal supplies of homegrown feeds, with concentrates, to balance out protein requirements.

Average Bulk Prices and Index of Weighted Prices*
(Dollars per ton)

	Jan. 26, 1960	Jan. 19, 1960	Change from previous week
OILSEED MEALS			
Prices at prin. mkts.:			
Soybean meal	68.50	70.20	—1.70
Cottonseed meal	63.30	64.95	—1.65
Linseed meal	76.00	76.15	— .15
Copra cake or meal	72.25	72.25	...
Peanut meal	61.50	62.50	—1.00
Index	88.3	90.2	—1.9
ANIMAL PROTEIN FEEDS			
Prices at prin. mkts.:			
Meat meal	74.35	76.10	—1.75
Tankage	73.90	74.35	— .45
Fish meal	110.75	111.50	— .75
Index	71.5	72.6	—1.1
GRAIN HIGH-PROTEIN FEEDS			
Prices at prin. mkts.:			
Gluten feed and meal	51.00	50.20	+ .80
Dist. dried grains	59.25	59.50	— .25
Brewers dried grains	48.40	48.50	— .10
Index	81.2	80.4	+ .8
WHEAT MILLFEEDS			
Prices at prin. mkts.:			
Bran	40.75	42.70	—1.95
Midds. and shorts	41.30	43.90	—2.60
Index	74.1	78.3	—4.2
OTHER MILLFEEDS:			
Prices at prin. mkts.:			
Hominy feed	43.60	43.50	+ .10
Rice bran	33.00	34.00	—1.00
Index	67.5	67.7	— .2
ALFALFA MEAL			
Prices at prin. mkts.	56.90	56.65	+ .25
Index	109.5	109.1	+ .4
MOLASSES FEEDING			
Prices at prin. mkts.	21.77	22.94	—1.17
Index	64.8	68.2	—3.4
ALL FEEDSTUFFS			
Index	81.5	83.5	—2.0
FEED GRAINS			
Prices at prin. mkts.			
Corn	39.80	40.20	— .40
Oats	49.00	49.70	— .70
Barley	43.70	43.90	— .20
Grain sorghums	37.70	37.30	+ .40
Index	65.5	66.2	— .7

*Base period of index is 1947-49.
Source: Agricultural Marketing Service, USDA.

Columbus Meeting

COLUMBUS, OHIO — A color movie entitled, "The St. Lawrence Seaway," will be shown at the Columbus Feed Club Country Elevator Night Feb. 1.

The meeting will be held in the Terrace Room of the Southern Hotel.

Wide Range in Grain Warehousing Costs Indicated in Analysis of Field Survey

WASHINGTON—A wide range in the costs incurred by individual warehouses in storing grain is shown in a preliminary analysis of the results of a recent field survey of commercial storage costs, the U.S. Department of Agriculture reported.

(Also see Uniform Grain Storage Agreement stories in Feedstuffs for Jan. 23 and elsewhere in this issue.)

The survey, preparations for which were started by the department more than a year ago, was carried out in the field last fall with the cooperation of the commercial grain storage industry. It is the most comprehensive storage cost survey ever undertaken by the department.

The results of detailed checks in 432 country and terminal warehouses are being analyzed and tabulated by department specialists. They are also being extended to reflect all available commercial grain storage space on a national basis.

The preliminary results of the study show that direct operating storage costs for the great bulk of all available storage space, not including handling charges and other expenses involved in storing grain, averaged from 5¢ to more than 21¢ bu. for different warehouse groups, on an annual basis. A small percentage of costs reported as above or below this range apparently reflect unusual conditions which warrant further analysis, USDA said.

Benson Comments

Commenting on the cost survey, Ezra Taft Benson, secretary of agriculture, said: "The great range of costs for different groups of warehousemen in storing grain emphasizes the need to study all reports of storage costs with care and against the background of the whole situation. Citing individual cases or using 'averages' loosely can lead to unsound conclusions.

"In connection with the preliminary cost data we are reporting, it should be clearly understood that only direct operating storage costs are reflected. The estimates do not include all the expenses for which warehousemen must be responsible in storing grain. The reported costs do not include indirect costs such as those involved in quality deterioration, shrinkage and return on capital investment. These expenses must be added in any consideration of storage contracts.

Loss Responsibility

"Under the Uniform Grain Storage Agreement, which controls rates and conditions for storing Commodity Credit Corp. surplus holdings, the warehouseman is fully responsible for any loss in quality or quantity. Unfortunately, there has been an instance where a warehouse company lost around $15 million in making good to the government for losses of this kind. When CCC stores grain in its own emergency bin or ship facilities, it must itself assume all losses of this kind.

"The survey results are still preliminary, based on reports from the field which have not yet been fully checked. The results are subject to further analysis and adjustment.

"We made the partial results available, however, so that they could be used in current discussions with representatives of the warehouse industry, who were here for one of a continuing series of conferences looking toward renegotiation of the Grain Storage Agreement.

"Our concern is to see that this agreement continues to reflect rates and conditions which are fair and equitable, in the light of changes which may have taken place since the last renegotiation in 1956. They must be fair to the government, on a sound basis. They must be fair to industry, if it is to continue to provide needed services.

"With grain stocks so large, and increasing, partial availability of storage space will not meet national needs. Farmers must have space to hold their grain for orderly market-

(Turn to STORAGE, page 100)

Washington Feed Panel Will Discuss Industry Trends

SEATTLE, WASH. — A panel discussion on industry trends will be one of the highlights of the Washington State Feed Assn., Inc., convention Feb. 12 at the Chinook Hotel in Yakima. The convention will immediately follow the Pacific Northwest Feed Mill Production School Feb. 10-11.

Ten topics currently of interest to feed men will be discussed by a six-member panel moderated by Len Hitchman, Ralston Purina Co., Seattle.

Topics to be discussed include:

"Sales of Custom Mixes at So Much per Ton Over Ingredient Cost."

"Guaranteed Price per Bird to the Grower."

"Is There a Place for the Retail Dealer Within the Industry as We Know It Today? If So, How Will the Retailer Survive?"

"Does the Feed Industry Feel It Is Necessary to Secure Its Market for Feed by All-Out Contract Growing of Broilers, Layers, Beef Cattle and Hogs?"

"Are the Feed Industry Members Anticipating Owning the Poultry Housing as Well as the Chicks?"

"Feed Industry Output and Prospects for the Future."

"What Can Be Done to Keep the Independent Producer Independent?"

"Will Direct Sales of Feed From Large Firms to Producers Increase?"

"Are the Feed Companies Interested in Profit on Eggs or Feed; or Does It Matter Where They Make Their Profits?"

"Does the Expansion of Supermarkets in This State Signal Any Shifts as to the Number of Buyers of Poultry, Cattle, Hogs, etc.?"

Members of the panel, besides Mr. Hitchman, include: Henry Fors, Fors Hatchery & Breeding Farm, Puyallup; Dwight Howell, Centennial Mills, Inc., Portland, Ore.; Lowell Judd, Albers Milling Co., Seattle; Oakley

(Turn to FEED PANEL, page 100)

Dakota Salt Plant Sets June Production Date

WILLISTON, N.D. — Dakota Salt & Chemical Co. plans to be producing salt products for the feed industry in its new plant by June 1, according to Thad E. Mendenhall, vice president and sales manager.

T. E. Mendenhall

"Our plant will be geared for an annual production of 120,000 tons," said Mr. Mendenhall, "and we are aiming for 50,000-100,000 tons this year." The firm has drilled two salt wells and a disposal well, and the plant is now under construction.

Mr. Mendenhall said that the firm will market plain and trace mineralized and iodized evaporated feed mixing salt and block salt. Sulphurized block salt and water softener pellets also will be manufactured.

The salt will be washed from a depth of 8,500 feed by pumping water into the salt caverns which forces the brine to the surface for processing. The salt solution will be put into the disposal well and stored until the plant is in production, Mr. Mendenhall said.

The company will operate a liquid petroleum storage depot in connection with the salt plant. As new wells are drilled, old caverns will be leased on a fee basis to bulk distributors of propane, butane and petroleum hydrocarbons in the U.S. and Canada.

The depot will be served by two railroad spurs, now nearing completion.

Other officers of the Williston company, a subsidiary of General Carbon & Chemical Corp., Lake Forest, Ill., are J. A. Bierbaum, vice president and general manager, and Fred Hoyer, technical service director.

Mr. Mendenhall was with American Salt, Kansas City, for 20 years and Mr. Hoyer was technical director for Hardy Salt Co.

TABLE 1

COMMERCIAL GRAIN STORAGE SURVEY OF DIRECT OPERATIONAL COSTS 1/

Average Direct Operational Cost Per Bushel of Storing Grain for Others by Type of Facility in the Survey, Expanded to U. S. Totals

Item	Unit	Country Warehouses	Terminal Warehouses	All Warehouses
1. Number of Facilities in U. S. 2/	No.	9,010	600	9,610
2. Number of Facilities in Sample used in Analysis	No.	331	101	432
3. Percent of total U. S. Facilities in Sample	Percent	3.7	16.8	4.5
4. Total Capacity of all Facilities in U.S. 3/	1000 Bu.	2,153,175	1,484,711	3,637,886
5. Capacity Available in all Facilities for Storing Grain for Others	1000 Bu.	1,682,276	1,128,607	2,810,883
6. Percent of Total Capacity Available for Storing Grain for Others	Percent	78.1	76.0	77.3
7. Total Volume of Grain Stored for Others	1000 Bu.	1,299,591	937,004	2,236,595
8. Percent Occupancy of all Space Available for Storing Grain for Others	Percent	77.3	83.0	79.6
9. Total Direct Operational Cost of Storing Grain for Others	1000 Dol.	131,547	80,487	212,034
10. Average Direct Operational Cost per Bushel for Storing Grain for Others	Cents	4/ 10.1	4/ 8.6	4/ 9.5

1/ These costs do not include indirect costs such as quality deterioration, shrinkage and return on capital investment.
2/ Excluding facilities under CCC agreement only to handle grain.
3/ Capacity of facilities under item 1.
4/ Represent only direct operational costs and do not include unknown costs resulting from such factors as guaranteed quality and quantity upon delivery by the warehouseman, and return on capital investment.

TABLE 2

COMMERCIAL GRAIN STORAGE SURVEY OF DIRECT OPERATIONAL COSTS 1/

Frequency Distribution of All Warehouses in Survey by Storage Cost Groups Based on Direct Operational Costs for Storing Grain for Others Showing Number of Facilities and Capacity Available for Storing Grain for Others, Expanded to United States Totals.

ALL WAREHOUSES

Direct Operational Storage Cost Groups 2/	ACTUAL No. of Facilities	ACTUAL Capacity (000 bu.)	CUMULATIVE Facilities Number	CUMULATIVE Facilities Percent of Total	CUMULATIVE Capacity Bushels (000)	CUMULATIVE Capacity Percent of Total
(cents per bu)						
Less than 5.0	502	172,227	502	6.5	172,227	7.0
5.0 - 5.9	643	310,224	1,145	11.9	482,451	17.2
6.0 - 6.9	573	351,074	1,718	17.9	833,525	29.7
7.0 - 7.9	973	275,291	2,691	28.0	1,108,816	39.4
8.0 - 8.9	1,273	347,479	3,964	41.2	1,456,295	51.8
9.0 - 9.9	859	195,160	4,823	50.2	1,651,455	58.8
10.0 - 10.4	357	194,540	5,180	53.9	1,845,995	65.7
10.5 - 10.9	317	87,646	5,497	57.2	1,933,641	68.8
11.0 - 11.4	311	56,691	5,808	60.4	1,990,332	70.8
11.5 - 11.9	378	143,345	6,186	64.4	2,133,677	75.9
12.0 - 12.4	329	117,806	6,515	67.8	2,251,483	80.1
12.5 - 12.9	306	73,428	6,821	71.0	2,324,911	82.7
13.0 - 13.4	235	40,580	7,056	73.4	2,365,491	84.2
13.5 - 13.9	236	81,832	7,292	75.9	2,447,323	87.1
14.0 - 14.4	160	51,940	7,452	77.5	2,499,263	88.9
14.5 - 14.9	305	44,943	7,757	80.7	2,544,206	90.5
15.0 - 15.4	251	54,584	8,008	83.3	2,598,790	92.5
15.5 - 15.9	191	14,784	8,199	85.3	2,613,574	93.0
16.0 - 16.4	148	25,672	8,347	86.9	2,639,246	93.9
16.5 - 16.9	88	16,886	8,435	87.8	2,656,132	94.5
17.0 - 17.4	163	22,997	8,598	89.5	2,679,129	95.3
17.5 - 17.9	94	19,571	8,692	90.4	2,698,700	96.0
18.0 - 18.4	109	11,162	8,801	91.6	2,709,862	96.4
18.5 - 18.9	27	1,996	8,828	91.9	2,711,858	96.5
19.0 - 19.4	33	19,592	8,861	92.2	2,731,450	97.2
19.5 - 19.9	115	14,375	8,976	93.4	2,745,825	97.7
20.0 - 20.4	60	13,944	9,036	94.0	2,759,769	98.2
20.5 - 20.9	54	1,906	9,090	94.6	2,761,675	98.2
21.0 & Over	520	49,208	9,610	100.0	2,810,883	100.0
Total	9,610	2,810,883	9,610	100.0	2,810,883	100.0

1/ These costs do not include indirect costs such as quality deterioration, shrinkage and return on capital investment.
2/ Represents only direct operational costs and does not include unknown costs resulting from such factors as guaranteed quality and quantity upon delivery by the warehouseman, and return on capital investment.

Recent 'Controlled Energy' Feeding Research Related

LIBERTYVILLE, ILL. — Some of the more recent research results on automatic restricted feeding through controlled energy at the Ful-O-Pep Research Farm were reported here Jan. 21 at a poultry press and radio seminar.

The Ful-O-Pep division of The Quaker Oats Co. invited a group of editors, news directors, writers and broadcasters and poultry breeders to the seminar. The purpose of the seminar, it was noted, was to bring the various educational media directors up to date on certain aspects of the research being conducted.

Recent results on automatic restricted feeding through controlled energy in the feeding of replacement pullets, turkey breeders, broilers and meat-type breeder hens were reviewed.

"The Quaker Oats Co. introduced last year a new principle of growing pullets on 'controlled energy' using a high fiber feed," said Dr. L. A. Wilhelm, director of poultry development and market research. "This new principle has been adopted widely. It is a labor-saving, fool-proof way of growing pullets.

"While the pullets eat more of this economical feed," he said, "it costs no more than conventional feeding plans. It does more than restricting according to poundage—but requires much less work."

Dr. Wilhelm reported that this new feed accounted for about 12% of all pullets grown on Ful-O-Pep and estimated that more than 5% of all America's pullets in 1959 were raised on this type of feed, since many companies started manufacturing similar feeds in 1959.

Dr. Wilhelm's reports on the high fiber pullet developer feed, as well as the statements of producers present, were said to point to increased adoption in 1960 of this type of feed for growing pullets intended for egg production.

Producers who used the feed in producing both commercial egg and broiler breeder pullets in 1959 were brought in from Pennsylvania, Missouri and Oklahoma that they might be interviewed. Each brought his complete records.

Restriction for turkey breeder pullets also was reviewed.

"One of the problems in turkey production—not unlike broiler production—is that the breeders become too fat in the period before egg pro-

(Turn to CONTROLLED ENERGY, page 97)

CONTROLLED ENERGY—Shown here is Jim Ritchie of Jenks, Okla., one of the producers who took part in a poultry feed seminar held for editors by The Quaker Oats Co. Mr. Ritchie said that he had started 22,300 Hyline pullets on "Ful-O-Pep Pullet Developer." He showed records indicating a feed cost of 72.8¢ per pullet housed, and he said that housing of 98% of chicks started could be attributed in part to use of the "controlled energy" feed.

MONTANA

(Continued from page 4)

Mixed Feed and Fat in Swine Rations."

Seven talks will fill the agenda in the afternoon.

R. Kaye Bergman, of the host school, who will give two talks in the afternoon, will speak on "Response of Dairy Cows to Shades in Pastures" to open the afternoon sessions. Dr. A. L. Neumann, University of Illinois, Urbana, will follow with "High-Energy Ensiled Cattle Finishing Rations." Dr. R. C. Klussendorf, Commercial Solvents Corp., Terre Haute, Ind., will speak on "Antibiotics in Livestock Feeding Programs."

After a break, Mr. Bergman will give his second talk of the afternoon, "A Comparison of Three Mineral Supplementation Plans Upon Blood Calcium and Phosphorus." Dr. E. P. Smith, also of Montana State, will follow with "Effect of Phosphorus Supplementation on Breeding Efficiency."

Two Montana State speakers will close out the opening day sessions. Dr. Stuart Young will speak on "Selenium in Animal Nutrition," and Dr. E. E. Frahm will talk on "The Use of Forages Containing Measurable Amounts of Nitrate Nitrogen."

John Doty, of the host school, will give the opening talk of the Tuesday sessions, "Effect of 3, 3' Diallyldiethylstilbestrol in Rations for Steers Wintered on the Range and in Subsequent Summer Grazing and Feedlot Trials and in Feedlot Rations for Heifers." Dr. O. O. Thomas, also of Montana State, will follow with two consecutive talks, "The Value of an Enzyme in a High Barley Cattle Fattening Ration" and "Pelleted and Unpelleted Lamb Fattening Rations With Various Levels of Roughage." Dr. Neumann then will speak on "Pelleting Roughages and Complete Rations for Livestock."

Two talks will close the morning sessions. Dr. Jordan will speak on "Lamb Feeding," and Dr. Ralph P. Soule, Jr., Farmers Union Grain Terminal Assn., representing the American Feed Manufacturers Assn., will speak on "Tranquilizers in Livestock Feeding."

Four talks will be given during the final afternoon. "The Influence of High Calcium Levels Upon Egg Production and Egg Shell Quality" will be the title of a talk by C. F. Petersen, University of Idaho, Moscow. J. T. Gillingham of Montana State then will speak on "Effect of Pelleting of Corn, Barley and Wheat Mixed Feeds on Laying Rations."

Prof. Petersen will give another talk entitled "High Barley Rations Including Pelleting, Enzyme Additions and Laying House Temperatures Upon Egg Production."

The final talk of the conference will be given by John A. Kedzior of Montana State and will be titled, "Application of Food, Drug and Cosmetic Act to Animal Feeds."

A tour of the poultry plant will close out the convention.

A dinner and meeting of the Montana Feed Manufacturers & Dealers Assn. will be held 7:30 p.m. Feb. 7 at the Baxter Hotel. The conference banquet will be held 7 p.m. Feb. 8. Samuel M. Golden, Amburgo Co., Philadelphia, will give a talk entitled, "America First."

INDUSTRY PROTESTS

(Continued from page 1)

ficial protests had to be filed by the end of this week.

In addition to various specific points in the protest, industry and other spokesmen expressed great concern about the FDA's "playing the role of nutritionist" and acting on the basis of nutritional efficacy rather than safety.

The AFMA statement said in this regard: "A principle to which we are unalterably opposed is one that could result from the apparent interpretation that FDA can restrict or prohibit use of a product based on nutritional efficacy rather than on safety. We refer specifically to the proposed restriction on the use of cobalt to feeds for ruminants only and the restriction of zinc for swine and poultry only. There is no indication that safety is involved in this regrettable decision."

A leading nutritionist told FDA: "I am exceedingly upset to find FDA playing the role of nutritionist in setting the levels of trace minerals which can be used in feeds and which cannot be used in feeds at those levels which they believe to be nutritionally required rather than the levels which have been shown to be safe—and doing this under the heading of minerals that are 'generally recognized as safe'."

The AFMA protest made a number of points. Among them were these: That a 30-day period is not sufficient time to properly review and compile data on the complex subject; that no action should be taken on this matter until opportunity is provided for a thorough study; that there is no reasonable justification to exhibit concern about basic safety of the mineral compounds and that the proposal is unnecessary; that the mineral compounds have a long history of safe use; that common use over a long period has established them as safe under conditions of intended use and that they should not be considered as subject to the food additives amendment; that the FDA probably agrees with this viewpoint in general but that the suggested limitations can only be defended on the basis that the compounds are "food additives"; that the safety of the mineral compounds is not of important concern under conditions of intended use; that the use limits now proposed are set far too near the recognized nutritional levels rather than at safe or nontoxic levels; that mineral requirements vary under different conditions and in different locations.

The AFMA asked that the proposal either be amended or completely withdrawn. The present proposal, it was said, would prove detrimental to both the feed industry and livestock and poultry producers.

AFMA said it did not question the right and duty of FDA to insure safety of feeds and foods, but it said that if safety is not involved and unfounded or unsubstantiated claims are not made, a feed manufacturer should continue to have the opportunity and privilege to use any ingredient, with the responsibility of proper labeling and use instruction assumed by the manufacturer.

The National Feed Ingredients Assn. has taken a similar stand on various points and filed a protest. For one thing, the association holds that the trace minerals are not food additives under the legal definition. Also, the group protests the setting of tolerances on the basis of reported nutritional value rather than safety.

In a letter to the food and drug commissioner, Mr. Glennon proposed that a committee of AFMA Nutrition Council members be named to work with nutritionists of the National Research Council and other groups—this body to study the matter of limitations, requirements and needs for the compounds. After this group had gathered data, it could meet with FDA representatives for a further exchange of ideas.

STORAGE

(Continued from page 1)

headed by Mr. Fountain. The Symington approach is largely judicial, ethical and constructive in its attitude, while that of the Fountain committee can be described best as a political "hatchet gang" designed to produce mud for slinging in the next national political campaign.

Although Mr. Palmby forecast a probable reduction in grain storage rates, he did, at the same time, note the effect of reduced rates on farmers who have built facilities on their own farms at repeated government urging on the basis of storage payments which are equal to those paid commercial and cooperative grain warehousemen.

The Palmby statement on a probable reduction in grain storage rates should come as no real surprise. This source reported two weeks ago that a reduction in grain storage rates was in the cards—and this same indication came from U.S. Department of Agriculture sources after the first USDA witness appeared before the Symington sub-committee.

Subsequently, an influential representative of the grain storage warehouse committee told this reporter that he believed his company, holder of substantial amounts of government grain, would not be unwilling to accept a reduced storage rate for government grain held in the firm's facilities after the first year of storage. This individual admitted, in effect, that costs decline after the first year of storage.

Grain men have said in Washington that since evidence seems to reveal that storage costs for the second year are lower than for the first year, some form of a downward escalator rate might provide some of the cost relief which Sen. Symington insists is needed.

This information, it is said, may be unpalatable to some of the big farm cooperatives which have been beneficiaries of present grain storage payments, and they may be expected to carry the burden of fighting the congressional drives to lower grain warehouse storage rates.

It is somewhat surprising that Mr. Palmby, a responsible official of USDA, would give utterance to his forecast of lower grain storage rates prior to final negotiations with the trade negotiating committee. This advance notice may be merely a device to cut the fangs of the congressional committees—or perhaps it may whet their desire.

Midwest Committee on Traffic to Meet Feb. 8

KANSAS CITY — Ray Cox, Acme Traffic Service, and Owen Smith, Cargill, Inc., Kansas City, co-chairmen of the traffic advisory committee of the Midwest Feed Manufacturers Assn., have called a meeting of the committee during the MFMA convention.

The committee will meet at noon, Feb. 8, in the Muehlebach Hotel suite of Acme Traffic Service. Lunch will be served. Reservations for the luncheon may be made through Mr. Smith, VIctor 2-8464 or through Mr. Cox, VIctor 2-4135.

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Pelleting Major Topic at Northwest Production School

YAKIMA, WASH.—Discussions of pelleting of various types of feed will highlight the program of the Pacific Northwest Feed Mill Production School scheduled for Feb. 10-11 at the Chinook Hotel. The school is sponsored by the Washington State Feed Assn., Inc.

The talks will be interspersed with five discussion groups so that feed men can ask questions and exchange information.

Giving the opening talk on the program Wednesday afternoon will be Marion J. Kloster, feed division, General Mills, Inc., Minneapolis, speaking on "Processing of Feeds Before Pelleting."

William Salmon, Pacific Power & Light Co., Portland, Ore., will follow up this talk with a discussion of "Pelleting as Related to Alfalfa and Roughage Feeds."

Following a pair of discussion groups, Arthur Stegner, Butler Manufacturing Co., Kansas City, will speak on "Factors Involved in Control of Fines in Storage and Related Bin Design."

Two talks will open the Thursday morning sessions. "Operating a Pellet Mill," will be the subject of a talk by Rex Wagner, Sprout, Waldron & Co. southern California representative.

Paul J. Husting, California Pellet Mill Co., Crawfordsville, Ind., will follow this talk with "Pellet Cooling, Crumbling and Scalping." A pair of discussion groups will close out the morning sessions.

"There's Many a Slip," a research film showing the effects of head pulley speed on bucket elevators, will be presented by A. T. Ferrell & Co., Saginaw, Mich., in the afternoon. A final panel discussion, featuring discussion group summary reports and an open forum, will close out the sessions.

Topics of the discussion groups, to follow speeches on the same topics, and moderators of the groups include: "Processing of Feeds Before Pelleting," L. E. Thompson, Reid-Strutt Co.; "Pelleting Roughage and Alfalfa Feeds," Andy Baardson, Larson & Baardson, Inc.; "Operation of a Pellet Mill," Ken Bratney, Reid-Strutt Co.; "Processing After Pelleting," Art Wilde, California Pellet Mill Co., and "Bulk Storage and Delivery of Pellets," Robert Adelman, Adelman Machinery Co.

Reports on Broiler Study to Be Given at Maryland Field Day

SALISBURY, MD.—Reports on the most recent broiler study at the University of Maryland sub-station will be given Feb. 3 at the university's Field Day.

Reports will be on the first broiler study just coming off trial conducted in the new 350-ft. experimental house, according to James L. Nicholson, University of Maryland extension poultry specialist in charge of the sub-station. Guests will tour the 32-pen broiler house that was recently completed at the station.

The demonstration will consist of the production performance of eight broiler crosses currently available to Maryland broiler producers.

In this study, the females and males were raised separately so that more accurate data could be presented on feed conversion and body weight. At the termination of the Field Day, the various crosses will be processed in a local plant to collect individual information in reference to yield, conformation and grade of birds.

During the tour of the house, which starts at 1:30 p.m., Mr. Nicholson will discuss the demonstration. At the end of the tour, Dr. Clyne S. Shaffner, head of the University of Maryland poultry department, and Drs. Gerald F. Combs and Norman V. Helbacka, of the department, will discuss research data from this study and the nutritional broiler studies currently in progress in the other building on the station.

In the nutrition study, various groups of rations were used containing fish, crab and poultry by-products meal, and fish solubles as the source of animal protein, for half of the birds. In the other group, the protein was derived entirely from corn, soybean and other vegetable protein sources. In addition to the protein variables, additional vitamins were also tested. A particularly interesting phase of this trial is that the males and females were raised in separate pens, Mr. Nicholson says.

In addition to obtaining the results and viewing the experimental pens, guests will also have an opportunity to see various samples of the feed and dressed birds and obtain a copy of the results and rations. Mr. Nicholson urges anyone interested in broiler raising to be sure to attend the Field Day.

Canadian Farm Hog Numbers Decline

OTTAWA—Number of hogs on Canadian farms on Dec. 1 was 6,417,000, a decrease of 7% from 1958's total of 6,880,000, the Dominion of Bureau Statistics reports.

Decreases were posted for both eastern and western Canada, total for the eastern portion dropping 2% to 3,437,000 from 3,521,000 and the West 11% to 2,980,000 from 3,359,000. These estimates indicate a pronounced liquidation in recent months. On June 1, 1959, the total number of hogs on farms was 11% greater than at the corresponding date in 1958. This lead had been reduced to 3% by Sept. 1 and continued heavy marketings resulted in the reversal to a 7% decrease by Dec. 1.

Farmers' intentions reported on June 1, 1959, indicated that the fall pig crop might be 2% greater than in 1958. Reports at Sept. 1 showed hog production plans were changing and a 3% decrease was indicated. Farrowings from June to November are now estimated at 598,800 as compared with 640,400 in 1958, a decrease of 6.5%. Pigs per litter were slightly higher than in 1958 and the total number weaned at 4,622,000 was 5% below 1958's fall pig crop of 4,882,000. Expected farrowings for the December, 1959-May, 1960, pig crop are estimated at 588,500 sows, a decrease of 16% from a year earlier.

FEED FIRM SOLD

CARLSBAD, N.M.—Cox Feed & Farm Supply has been sold to R. M. Thompson, who will operate it under the name of Carlsbad Farm Supply. The previous owner was James C. Cox, who has entered another type of business.

D. B. Fisher R. W. Pifer

McMillen Feed Mills Makes Two Promotions

FORT WAYNE, IND.—Promotion of Raymond W. Pifer to manager of Master Mix livestock feeds and Donald B. Fisher to assistant manager of livestock feeds, has been announced by McMillen Feed Mills, Fort Wayne.

Mr. Pifer previously was beef feeds manager. He will be responsible for both beef and hog feed sales. He joined the firm as livestock specialist in 1954. Mr. Pifer graduated from Ohio State University and holds an M.S. degree from Purdue University. He has served as a professor of animal husbandry at Ohio State University, the University of Kentucky and Purdue University, and as executive secretary-manager of the Ohio Aberdeen Angus Breeders Assn.

Mr. Fisher is a graduate of Iowa State University. Prior to joining McMillen in 1957, he was a farm management specialist with the Iowa Agricultural Extension Service, and later was associated with a midwestern feed company.

New Agricultural Movie by Wirthmore Feeds Now Available

WALTHAM, MASS.—"A New Day in Agriculture," a 15-minute motion picture, produced in sound and color by Wirthmore Feeds, Inc., is available to poultry and dairy associations, county agents, 4-H, FFA, high school and college agricultural classes and other interested groups, it was recently announced by the company.

More than a year in the making, "A New Day in Agriculture" depicts the story of feed research behind the production of top quality meat, milk and eggs for the American table. Starring roles are played by actual poultrymen and livestock raisers on their own farms.

Latest developments in farm automation are pictured, along with modern research farm and laboratory facilities devoted to the study and practical application of new feeding and management methods.

The new film may be booked for showing within the Wirthmore area of distribution through local Wirthmore representatives or by writing to Wirthmore Feeds, Inc., 343 Winter St., Waltham, Mass.

KANSAS CITY OFFICERS—New officers of the Kansas City Feed Club are shown discussing plans for the coming year. Left to right, are James R. Ryan, International Milling Co., treasurer; Richard M. Shoop, Albers Milling Co., president; Neil N. Sosland, The Southwestern Miller, secretary, and John F. Ball, B & E Grain Co. John C. Scherer, Carey Salt Co., was named chairman of the club's executive committee.

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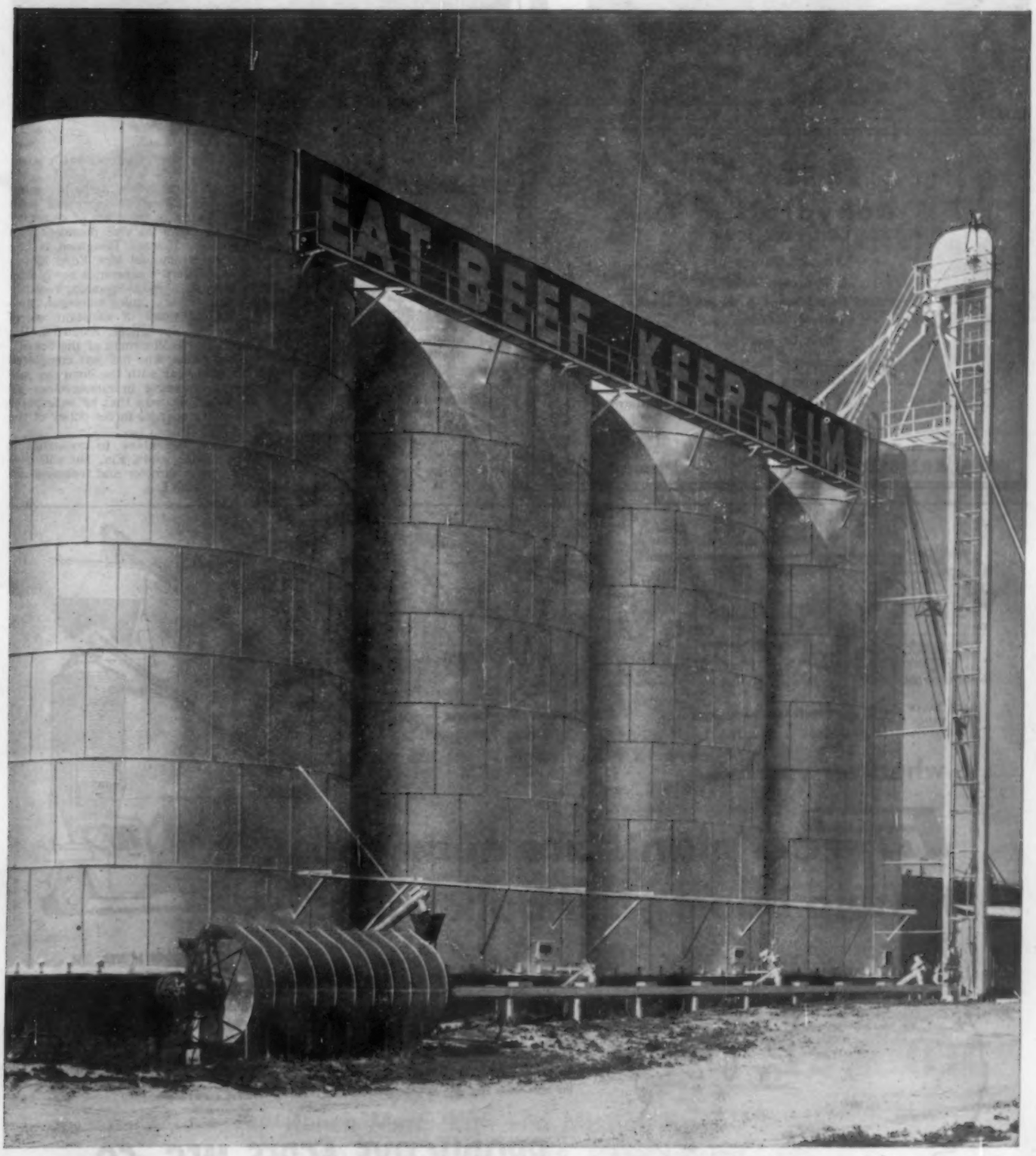

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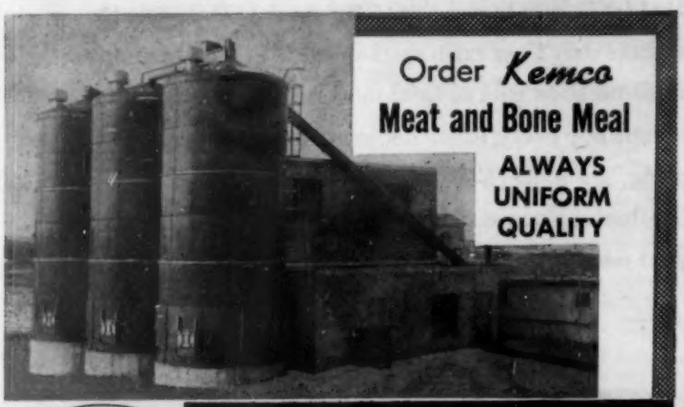

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TESTIMONIAL DINNER—Shown (seated) at the Blatchford Calf Meal Co., Waukegan, Ill., testimonial dinner honoring J. M. (Jim) Flinn, who is retiring as president, are Mr. Flinn and John S. Burchmore, board chairman. Standing (left to right) are: Howard Hoaglund, new secretary; Jack Sams, new president, and Eldon H. Roesler, publisher of Feed Bag.

Jack Sams Is Named Blatchford President

WAUKEGAN, ILL. — Jack Sams has been named to succeed J. M. (Jim) Flinn as president of Blatchford Calf Meal Co., Waukegan.

F. E. Jones

Mr. Flinn, who is retiring, was honored by office employees, officers and directors of the company.

John S. Burchmore, board chairman, presented Mr. Flinn with a radio and complimented him on the excellent job he had done as president for the past 25 years.

Eldon H. Roesler, publisher of Feed Bag at Milwaukee, was a guest speaker at the event.

In addition to Mr. Sams becoming president, Forest E. Jones has been promoted from the office of secretary and treasurer to vice president and treasurer. Howard Hoaglund is the new secretary and Mrs. Edna Makela is assistant treasurer, a newly created post. Bert O. Swanson, recently named general sales manager, also holds the office of assistant secretary. Mr. Burchmore, Evanston, Ill., continues as chairman of the board.

Mr. Sams, who has just completed his 30th year with the company and has been active in management all of this time, says that he anticipates no sharp changes in the policy of the company.

Mr. Flinn plans to construct a home in Sarasota, Fla., but will continue as a director and technical adviser to the firm.

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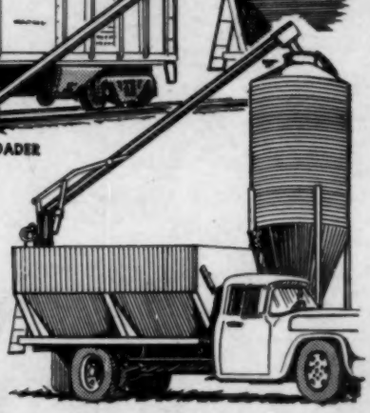

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Pullorum Tests on Heavy Turkeys Up

WASHINGTON — The number of heavy breed turkeys for supplying hatching eggs tested for pullorum disease during December, 1959, was 8% larger than the number tested during December, 1958, while testings of light breed turkeys were 17% less, according to the U.S. Department of Agriculture.

The number of heavy white breed turkeys tested during December, 1959, totaled 161,494 compared with 136,655 a year earlier—an increase of 18%, the Crop Reporting Board reports.

The testing of other heavy breeds (mostly bronze) totaled 546,221, compared with 516,053 in December, 1958 —an increase of 6%. Testings of light breed turkeys totaled 61,342—down 17% from December, 1958

During the months of July through December, testings of heavy white breeds were 8% larger than during these months in 1958 The testings of other heavy breeds were down 9% from this period a year earlier.

Testings of all heavy breeds for the period July through December, 1959, were down 5% from the same period in 1958. The testings of light breed turkeys during the months July through December, 1959, were 45% less than during these months in 1958.

Feed Man Honored

ST. JOSEPH, MO. — Dwight L. Dannen, president of Dannen Mills, was honored by the St. Joseph Junior Chamber of Commerce Jan. 14 as he was presented the annual "outstanding civic service" award.

Mr. Dannen was cited particularly for his role last year as campaign director for the United Fund. The drive went over the top for the first time since 1942.

Heads Purchasing for Professional Feeds

KANSAS CITY—Joe King, assistant manager of the corn milling division of Spencer Kellogg & Sons, Inc., Kansas City, has been placed in charge of the purchasing department for both the corn milling division and the Professional Feeds division.

Thomas W. Staley, president of the division, said in an announcement that Mr. King joined the firm in 1950 after graduating from the University of Missouri.

In addition to purchasing grain, ingredients and other feed supplies, Mr. King handles the bag purchasing and hominy feed sales.

Central Soya Dividend

FORT WAYNE, IND.—The board of directors of Central Soya Co., Inc., has declared a quarterly cash dividend of 27½¢ per share on the capital stock of the company payable Feb. 15, 1960, to stockholders of record at the close of business Jan. 29, 1960, according to an announcement by H. W. McMillen, chairman of the board.

This is the second quarterly dividend of the current fiscal year and a continuation of the company's record of cash dividends which has been uninterrupted since 1942.

The cash dividend of 27½¢ per share is equivalent to the 55¢ per share paid for the first quarter before the 2-for-1 stock split on Nov. 4, 1959. It represents a 10% increase over the dividend for the same quarter last year.

GRAND OPENING HELD

NYSSA, ORE.—Farmers Feed & Seed Co. held a grand opening recently, according to Dwight Wyckoff, manager. Farmers Feed & Seed is a successor to Tobler Feed Co., and has been operating since Aug. 5 under the present management.

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If you have a conveying problem and have to go vertical—nothing can beat a "Hammond" Screw-Lift. The Feeder conveys any distance horizontally and the vertical screw elevates to any practical height.

The beauty of a Screw-Lift is its simplicity, compactness and adaptability. It fits into the tightest places and forms an integral part of any processing procedure . . . bringing material to processing machines, or removing it from them. It will also function as a recycling unit, reclaiming from bins after depositing material in them.

The "Hammond" Screw-Lift is not merely a tube with a conveyor screw operating within it. It consists of features which prevent overloading or choking. It has stabilizer bearings which prevent whip. Its tube is split to allow easy access to screw at any point in the line—horizontal or vertical. Slip Couplings permit removal of any length of screw.

The patented enlarged junction between the horizontal and vertical unit is what keeps material "on-the-move" without clogging at this vital point. The vertical unit is timed with the horizontal for proper functioning. It is these basic features, plus sound design, dictated by long production experience that insures proper, fast movement of any free-flowing material without interference or degradation.

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Above photo shows two 6-in. Type "C" Screw-Lifts elevating feed with a high molasses content and discharging same into bins. The Screw-Lifts have a 3 ft. 7½-in. Feeder and are 30 ft. high. These units replaced two competitive vertical screw elevators because they could not handle the material. This installation typifies the adaptability of Screw-Lifts, operating in crowded quarters, efficiently delivering "difficult-to-handle" materials to the place required and performing successfully day in and day out on a synchronized basis with installed processing machinery.

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UP OR DOWN

By Dr. Leonard W. Schruben, Agricultural Economist, Kansas State College

Corn Prices First Half of 1960

Corn prices have shown a strong tendency to advance during the first six months of the calendar year. What are the chances of that seasonal pattern being followed this year?

The percentage of times the prices have gone up, stayed the same or gone down from January to March, to May and to July, are shown in Exhibit 1.

Here is how to read the exhibit:

EXHIBIT 1. Corn: Kansas Farm Prices, 1933-1959

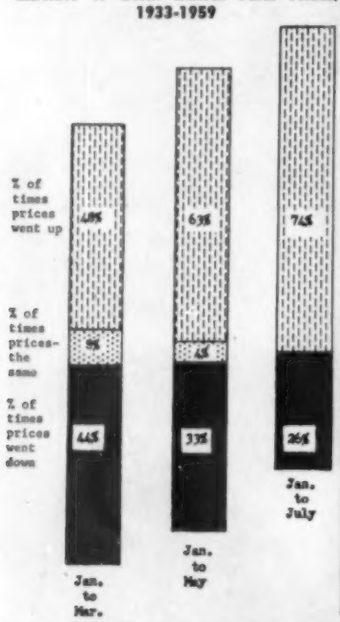
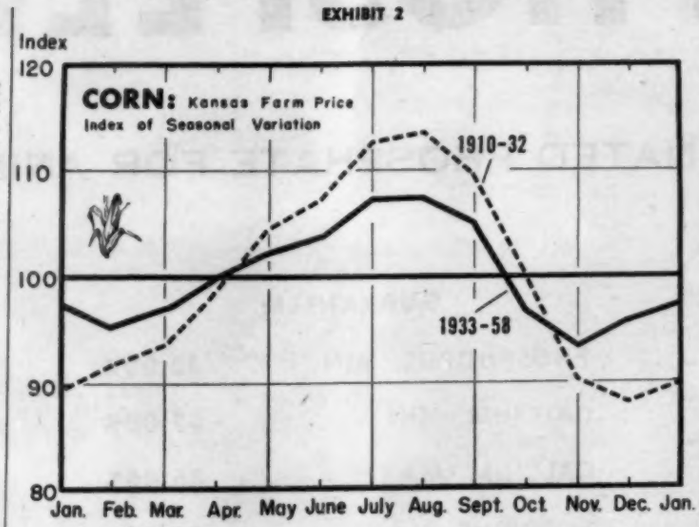


EXHIBIT 2



The top part of the bar in the March column, for example, indicates the percentage of times that prices went up. In the case of the January to March change it was 48%. The middle part of the bar indicates the percentage of times prices remained the same. The January to March no-change was 8%. The bottom part of the bar shows the percentage of times that prices went down from January to March. As you can see, it was 44%. Changes from January to the other months in Exhibit 1 are read in the same manner.

Corn prices have shown a strong tendency to advance during the season going up from January to July about three out of four years since 1933. The high point usually comes in July or August. You can see this in Exhibit 2 which shows a picture of the seasonal variation of corn prices in Kansas. This picture is in the form of an index, which is a statistical device used to simplify comparisons from one year to the next.

You will notice there are indexes for two periods. We went back to the earliest price data available beginning in 1910 and worked it through 1932. The seasonal variation for this period is shown by the dash line on Exhibit 2.

The more recent period beginning with 1933, is shown by the solid line on Exhibit 2. It was in 1933 that the price support program for corn began. You will notice the annual swing of prices from high to low has been less in the recent years.

What about this year? It now appears that corn prices will edge upward until mid-summer. However, you cannot expect prices to go up much more than enough to pay normal storage and carrying charges. The government program, including selling policies, will dominate the price situation.

FEED FIRM INCORPORATED

LEXINGTON, KY.—Sun-Ray Feed Mills, Inc., has been incorporated with $200,000 capital authorized. Incorporators of the firm to deal in agriculture are: O. L. White, Carl W. Hudgins, James D. Drymon and U. G. Briscoe.

DISCUSS PLAN—John Dodgen (right), president, and Jim Roach, sales manager of Dodgen Industries, discuss the Dodgen Purchase Plan which is now in effect.

Dodgen Announces New Purchase Plan

HUMBOLDT, IOWA—A new purchase plan, designed to "relieve financing problems," has been announced by Dodgen Industries here.

Explaining the plan, John Dodgen, president, says, "The plan is confidential financing with the red tape eliminated. Financing is on equipment only—no lien on property, livestock or buildings.

"The plan frees operating capital and the customer chooses his own payment schedule. Feed people can now expand their business to meet competitive operations through the use of the Dodgen All-Purpose Bulk Body, pelletizer or portable feed plan and the Dodgen Mix-O-Vator with the Dodgen purchase plan of financing."

Maryland Laboratory Appoints Veterinarian

SALISBURY, MD.—Dr. Dan Jaquette has been appointed assistant veterinarian at the Maryland Livestock Sanitary Laboratory here.

Dr. D. Jaquette

Dr. I. M. Moulthrop, veterinarian in charge, said, "We hope to expand our research of poultry diseases. There is a need for research in the respiratory problems. Many new biological products have to be investigated and studied."

Dr. Jaquette is a graduate of Pennsylvania State University with a major in animal husbandry. After graduating from the University of Pennsylvania veterinary school, he was with the U.S. Department of Agriculture seven years doing poultry research, later with the Delaware State Board of Agriculture for eight years doing poultry diagnostic work. For the past three years has had a similar position with the Florida Livestock Board.

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FEEDSTUFFS

SPECIAL ALFALFA SECTION

Automation in Alfalfa

"Benefits of automation in dehydration are improvement in uniformity and quality of the finished product for further automatic handling by feed mill and feeder."

By Joseph Chrisman
Executive Vice President
American Dehydrators Assn.

At the forthcoming convention of the American Dehydrators Assn., there will be shown a short movie entitled, "Alfalfa in the Age of Automation." This film is a production of the Certified Alfalfa Seed Council.

Dehydrators can claim to have been the first to bring this automation into the alfalfa picture and to promote and expand automatic handling of the crop from field to feed trough or feed mill.

Perhaps the first step in this direction was the designing and building of harvesters which would chop in the field as the alfalfa was mowed. This released men from one of the most burdensome and backbreaking jobs around a dehydrator; that of pitching tangled long hay into a stationary chopper which was necessarily placed right alongside the hot furnace of the dehydrator. The man who had that job often had the hot summer sun overhead and the hot furnace underfoot. It was no sinecure.

This field chopping development rapidly led to another piece of automatic equipment, the apron-type continuous feeder.

For a while, there were almost as many different types of automatic feeders as there were dehydrators using them. In those days the harvesters and automatic feeders were of many designs, many of them kept as secret as possible and a few even patented.

Some of the early field chopping harvesters were heavy, cumbersome and unwieldy. The old Redpath harvester which cut and delivered long hay to a trailer in the '30s usually ate up its purchase price in repairs in a couple of years' time. Many of the new harvesters were therefore built sturdy and heavy in hopes of avoiding breakdown and high repair bills. Often the flotation was insufficient for the weight and many a farmer has made a fuss about cutting up his field or compacting his soil.

Repairs Still Costly

Many of the early day headaches in harvesting have been overcome, but we would hazard a guess that harvesting repairs are still one of the major items in expense of producing dehy.

Automatic feeding of the alfalfa into the dehydrator did away with the wide fluctuations in rate of through-put and thereby increased hourly rate of production. When the feed varied so greatly through hand pitching of long hay, the quality also suffered. Under the earlier conditions, one could walk into a mill and find high piles of green alfalfa beneath the cutoff spout from the big cooling collector. Too high a rate of feeding had caused material to come thru too high in moisture for the hammermill to take it. This all had to be fed back by hand and both quality and production rate suffered. would be too low and material would At other times, the feeding rate be toasted a bit, thereby lowering quality and again reducing production rate below maximum. Automation has largely eliminated these violent fluctuations.

One of the dirtiest, most obnoxious jobs around an early-day dehydrator was sacking the finely ground product just as it came hot from the hammermill. A familiar tool adjacent to the sacking spout was a pick handle used for ramming the meal down in the burlap bag in an effort to get 100 lb. net. Dust flew out in all directions but mostly into the face of the packer.

After the bag was filled, it was moved by hand to the platform scale and finished off at the proper weight by a hand scoop. The less conscientious operator often bypassed the scale and merely filled the bag. Carloads were frequently shipped with bag weights running from 80-120 lb. and the manager or owner was in for a severe dressing down by the feed mill receiving it and often paid a severe penalty to boot. Not many sackers and sewers relished their jobs. No feedmill superintendent or employee liked handling those sifting bags of meal in 10 oz. used coffee liners or sometimes 8 oz. jutes.

New Processes

Such practices were just bound to change. In the case of firms which made a practice of blending to uniform quality, the handling of bagged material was a very costly procedure. Bags were filled, piled on the warehouse floor in lots; later the piles were torn down, bags opened and dumped for blending and the filling, sewing and piling all repeated.

Less than a decade ago, two new processes were introduced into the dehydrating industry, and both caught on very rapidly. The two went hand in hand and complemented each other in the furtherance of automation. That they each added materially to the quality of marketable product was a boon to the industry. Storage under non-oxidizing gases and pelleting are two of the most important developments that have occurred since the first green forage crop was artificially dried.

The first inert gas storage to be installed was designed for the handling of meal, and while it was entirely successful in the matter of preserving the oxidizable nutrients in the product and did permit a certain amount of automation through elimination of at least one bagging operation, the full benefits were not enjoyed until pelleting came into the picture.

Pelleting permitted double the amount of dehydrated material to be stored in a given volume capacity. Pelleting rid the industry to a large extent of the nuisance of dust. Pelleting changed very greatly the flow characteristics of the product and eliminated bridging in bins and tanks. Ground pellets produced a meal of less dustiness and greater density and by adding a very small amount of fat, it was found that dust was practically eliminated and the appearance of the product improved.

With the acceptance of bulk shipments by a large segment of the trade, automation became almost complete and hand labor has been reduced to a minimum. From the dehydrator to the pellet mill to inert gas storage; out of storage to blending, to bulk carloads of either pellets or reground material, all is handled automatically.

Room for Improvement

Lest we become complacent, it should be pointed out that there is still room for improvement. We would name a few spots where the dehydrator can better his position. Better fertilization of fields can do a lot to improve quality and quantity of the end product. New fields should be carefully analyzed for their need of lime, phosphate or potash and those needs supplied before planting. In some cases, there will be an improvement through the use of boron or molybdenum or sulphur or some other element. Such minor element deficiencies can usually be detected in the growing plant rather than through soil analysis.

Use of proven varieties of seed for specific locations is another point to be more closely observed. Life of stand in this case can be considerably affected by variety. Certified seed is always a safer bet than uncertified.

Great strides can be made in both quality improvement and yield by the judicial use of insecticides and herbicides. Observe that word judicial, let's not have within our industry any "cranberry" episodes.

Cutting cycle is of great importance in maintaining quality. It should not be haphazard but should be well planned in advance of the season and acreage adjusted accordingly.

Improve Efficiency

The dehydrator itself, the machine that does the work of removing moisture has changed but little in the past 30 years. Methods of applying heat have been improved some, but there is still a big possibility of improving the efficiency of the B.T.U.'s input in the form of gas or oil.

These latter points are not in line of automation but are the more nearly neglected opportunities for improvement. Most operators of dehydrating plants are lovers of machinery and the mechanical phases of the operation, and the large amount of automation now commonplace in the industry is a natural result of this desire to improve the process mechanically. There are these other phases which warrant further study and application.

Automation in the handling of dehydrated alfalfa is of continuing interest to the industry. Probably the greatest strides along this line have already been made, though one of the speakers at the last ADA convention mentioned the possibility of a remote control on the harvesters releasing a driver for other duties. Maybe that is fantastic now, but push-button feed mills might have been considered fantastic a quarter century ago.

The lasting benefits of the automation so far used in dehydration are the improvement in uniformity and quality of the finished product for the further automatic handling by both feed mill and feeder.

SPECIAL ALFALFA REPORT

This special section of Feedstuffs is devoted to the alfalfa dehydrating industry, with articles on dehydrated alfalfa research and industry developments. The articles are specifically prepared for the feed manufacturer and the producer, processor and seller of dehydrated alfalfa. This special report is published just prior to the annual meeting of the Alfalfa Dehydrators Assn. Feb. 3-5 at the Broadmoor Hotel in Colorado Springs, Colo. Special features include:

ESTROGENIC ACTIVITY: A report on research on estrogenic substances in forages and the significance of these substances in feeding. Page 10.

SWINE FEEDING: A college animal scientist discusses the role of dehydrated alfalfa in confinement feeding of swine. Page 19.

BEEF CATTLE: Experiments with alfalfa in various types of wintering and fattening rations for beef cattle are discussed on page 20.

POULTRY: Two Kansas nutritionists present their views and information on alfalfa carotene as a vitamin A source for poultry. Page 21.

ESTROGENIC ACTIVITY OF FORAGE CROPS

"The significance of estrogenic substances in forages commonly fed to farm animals has been the center of many discussions and merits further study."

By Dr. Warren D. Kitts
Division of Animal Science
University of British Columbia, Vancouver

It is now well established that many of the legumes contain substances which, when consumed by the animal, produce effects on the reproductive system similar to those induced by animal estrogens.

The occurrence in plants of the active substances was first reported in 1926. Extracts with estrogenic potency, as determined by the vaginal reaction of ovariectomized mice, or by the increase of uterine weight of intact of ovariectomized mice, have been prepared from over 50 plant species (Bradbury and White, 1954), as well as protozoa, coelenterates, Mollusca, worms, insects, etc. (Sharer, 1941).

A vast amount of information has been recorded during the past 10 years in commercial, popular and scientific publications on the use of natural and synthetic hormones in feedstuffs for beef cattle and sheep. The research conducted at universities, colleges, experimental stations and commercial laboratories clearly indicates that the synthetic estrogens, diethylstilbestrol (D.E.S.), hexestrol and dienestrol, discovered in 1938 in England by Dodds and coworkers, can be useful additives in feed material that will improve feed efficiency and rate of gain of fattening livestock.

SPECIAL ALFALFA REPORT

In the feed manufacturing industry, forage meals are widely employed in formulating animal and poultry feeds. These meals afford an excellent source of protein, minerals, vitamins and other growth promoting factors which could include the estrogenic substances.

In a recent study, Bickoff et al. (1960) of the Western Regional Research Laboratory (U.S. Department of Agriculture) investigated numerous dehydrated forage samples from various parts of the U.S. and found a large variation in apparent estrogen content between the samples. They partially attributed the differences in estrogenic activity to variety of plant species, cultural practices, stage of growth or season of year at which the plants were harvested. Dehydration or subsequent storage of the meal may contribute to some of the loss of estrogenic activity.

Stability

The stability of the estrogenic activity in alfalfa, ladino clover and red clover was studied by Swierstra (1958) at the University of British Columbia. He reported that alfalfa and ladino clover meals may lose most of their activity after six months' storage at room temperature, but samples of red clover were found to be much more stable. Studies conducted by Bickoff (1959) tend to confirm the observations made by Swierstra on the instability of the active agent in alfalfa and ladino clover, however, he suggests that the loss may not be as great. It is evident that more research is needed on the stability and instability of the estrogenic compounds in legume and grass meals.

Kitts et al. (1959b) have suggested at least five possible explanations for the variations that have been reported on the levels of the estrogenic activity of certain legumes and grasses. They are:

(a) The chemical nature and the relative activity of the substances may vary in the different species.

(b) The chemical nature of the active substances may undergo a series of sequential changes yielding compounds that are more or less estrogenic that those from which each originates.

(c) The stability of the active substances during harvesting, extraction, diet mixing, digestion or absorption may differ.

(d) Inherent variability in the forage species.

(e) Seasonally induced changes may arise which are independent of the growth pattern of the plant material.

In a recent publication, Kitts et al. (1959a) reported on the effect of stage of maturity and frequency of cutting on the estrogenic activity of red clover. The results obtained for first cuttings of red clover at different stages of maturity from second-year growth (1956), and the activity of first, second and third cuttings of the forage (second year) are given in Table 1.

All of the samples of the red clover possessed considerable activity. The level of estrogenic substances was highest in the spring (vegetative stage) and decreased towards the autumn (past bloom). Legg et al. (1950) made similar observations, and postulated that the level of estrogenic substances was associated in some way with the reproductive status of the plant material from which they were recovered.

TABLE 1. The effect of maturity and frequency of cutting on the estrogenic activity of red clover (second-year growth) (Kitts et al, 1956a).

Plot	Cutting	Date of Cutting	No. of mice	Uterine weight as per cent body weight	Estimated potency per lb. dry matter in terms of D.E.S. (Mcgms.)
A	1	May 2	8	0.56±0.02*	34
B	1	May 25	8	0.59±0.01	36
	2	July 18	8	0.57±0.04	34
	3	Sept. 2	8	0.42±0.02	15
C	1	June 18	8	0.48±0.01	33
	2	July 18	8	0.49±0.03	22
	3	Aug. 18	8	0.33±0.02	9
D	1	July 2	8	0.49±0.02	30
E	1	July 18	8	0.39±0.02	14
F	1	Aug. 18	8	0.28±0.01	6
G	1	Sept. 2	8	0.25±0.01	5

* Standard error.

Stage of Maturity

In a subsequent publication, Kitts et al. (1959b) described the effect of stage of maturity on the estrogenic activity of alfalfa, ladino clover, birdsfoot trefoil and orchard grass. The results (Table 2 and Figure 1) show that in general the estrogenic activity of the second year growth of the forages is relatively high during the early phases of vegetative growth. The activity declines to insignificant levels at the full bloom stage, and this is followed by a detectable increase in the early and late seed stages. This latter increase does not occur in birdsfoot trefoil. The changes in the estrogenic activity do not appear to be associated with changes in the percent dry matter or nitrogen in the forages. Orchard grass, as expected, was found to be essentially devoid of activity.

Since it is customary in practice to make several cuttings when legumes and grasses are harvested for forage, the effect of frequency of cutting on the estrogenic activity of certain forages was studied (Kitts et al. 1959b). The estrogenic activity, nitrogen and dry matter values of this investigation are given in Table 2.

In the case of alfalfa, the time at which the first cutting is made appears to influence the estrogenic activity of subsequent cuttings. Ladino clover, on the other hand, behaves quite differently. Regardless of the date of the first cutting the activity pattern follows that displayed by alfalfa and ladino clover when they were allowed to grow in an uninterrupted manner. The estrogenic activity of birdsfoot trefoil taken in May is approximately half the activity of that of the alfalfa or ladino clover sampled at the same time. Later samples of the trefoil, whether taken from uninterrupted growth or sequential cuttings were devoid of activity. Sequential cuttings of orchard grass do not possess estrogenic activity.

Seasonal changes of light environment appear to have an effect on the estrogen activity of forage crops. These changes involve a number of facts. The length of day changes, hence it is important to consider that the twilight period before sunrise and after sunset varies. The intensity of light and its composition vary with the altitude of the sun; the proportion of ultraviolet drops with increasing thickness of the atmosphere to be penetrated. Day-length is maximal at midsummer while the rate of change of day-length is greatest at the equinoxes. These aspects have to be considered as possible factors

(Turn to FORAGE, page 23)

TABLE 2. The estrogenic activity of second-year growth of certain forages in relation to stage of maturity and frequency of cutting.

Forage species	Cutting	May				June				July				August				September			
		DES	DM	N	SM	DES	DM	N	SM	DES	DM	N	SM	DES	DM	N	SM	DES	DM	N	SM
Alfalfa	1	55	15.5	3.5	V	12	25.2	3.0	FB	4	34	2.2	FB	21	29.9	2.6	ES	17	36.4	1.3	MS
	2					14	18.8	3.5	V	0	20	3.5	V	2	18.2	4.2	V	3	23.1	3.1	V
	3									6	23.8	3.6	V	18	21.8	4.1	V	1	23.4	3.6	V
	4													43	20.5	3.0	V				
Ladino clover	1	57	12.3	4.3	V	9	16.0	3.7	FB	5	14.6	3.3	FB	20	26.4	3.3	ES	20	40.9	3.0	MS
	2					10	15.8	4.2	FB	24	21.7	3.7	FB	11	19.8	3.7	FB				
	3									15	20.3	3.6	FB	42	18.8	4.1	MB				
	4													30	26.6	4.1	MS				
Birdsfoot trefoil	1	22	12.3	4.0	V	0	22.5	2.8	EB	0	26.5	3.0	LFB	0	32.4	2.6	LSB	0	38.6	1.8	MS
	2					0	15.9	4.4	MB	0	18.1	3.4	MB	0	16.6	4.4	MB	0	22.3	2.8	V
	3									0	17.7	3.2	V	0	17.8	4.2	EB	0	21.4	3.2	V
	4													0	16.1	4.2	EB	0	30.6	2.7	V
	5																	0	32.4	2.8	V
Orchard grass	1	0	18.4	1.9	V	0	26.4	1.8	MB	0	36.1	1.8	FB	0	40.2	1.0	MS	0	54.1	0.9	LS
	2					0	19.6	2.2	V	0	28.1	1.2	V	0	23.5	1.3	V				
	3									0	28.3	1.3	V								

DES - Potency in terms of D.E.S. (mcgm.) per lb. dry matter
DM - Per cent dry matter
N - Per cent nitrogen
V - Vegetative
FB - Pre-bloom
EB - Early bloom
SM - Stage of maturity
LSB - Late second bloom
MB - Mid-bloom
FB - Full bloom
LFB - Late first bloom
ES - Early seed
MS - Mid seed
LS - Late seed

The Role of Dehydrated Alfalfa in Confinement Feeding of Swine

"Dehydrated alfalfa, with its known nutrients and its sources of unidentified factors, has long been used as the most effective ingredient which bridges the nutritional unknown and makes swine production possible without use of pasture."

● By Dr. J. H. Conrad
Purdue University

One of the fundamental changes taking place in the swine industry is the trend toward more confinement rearing of swine. The application of the known principles of nutrition and the use of the latest technological advancements in the area of swine production now make it possible to raise pigs from birth to market in confinement (on concrete). Whereas, only one-third of the pigs are currently being finished in confinement, it has been estimated that in five years this may increase to 60% and in 10 years three out of every four pigs may be finished in confinement.

Few people advocate complete confinement of sows and gilts during pregestation and gestation, but there are a number of swine producers who are trying it and many more who are interested. In general, the practice of confinement rearing of swine during the various stages of the life cycle has become so widespread that the nutritionist and the feed manufacturer must formulate and fabricate feeds that will give optimum performance in complete confinement. This is true because they have no assurance that the animals to which their rations are fed will receive pasture at any stage of growth or reproduction.

Dehydrated alfalfa meal, with its known nutrients and its sources of unidentified growth and reproductive factors, has long been advocated and used as the single most effective ingredient which bridges the nutritional unknown and makes swine production possible without the use of pasture. The fact that most swine feeds, except pre-starters and some starters, contain dehydrated alfalfa meal is striking evidence of its valuable role in swine nutrition.

It is significant that the Nutrition Workshop Committee at the first Swine Industry Conference in 1958 summarized their thinking concerning confinement feeding, dehydrated forages and growth factors as follows: "Unidentified growth factors will become more critical as swine production moves to concrete. Hogs will be subjected to increased nutritional stress. They will not have access to the natural sources of nutrients formerly available in pasture and soil. Silages, green cut forages and dehydrated forages will play a more important role in feeding breeding stock on concrete."

SPECIAL ALFALFA REPORT

Dr. J. H. Conrad

AUTHOR—For the past seven years, Dr. Conrad has been conducting swine nutrition experiments at Purdue University, Lafayette, Ind. Since 1953, he has been supervisor of the swine nutrition unit, where the research results presented at the annual Purdue Swine Days are obtained. He holds the rank of assistant professor of animal science, and his duties are concerned with full-time swine nutrition research under Dr. W. M. Beeson, who is in charge of the animal nutrition research program at Purdue.

"Accentuate the Plus Factors"

Dehydrated alfalfa meal contains a number of "plus factors" which will make valuable contributions to swine rations of the "sixties." Undoubtedly, dehydrated alfalfa meal will make its greatest contribution in pregestation and gestation rations by improving litter size, birthweight and livability of newborn pigs. Early research at Missouri (9) showed that confined sows receiving 5% alfalfa meal weaned 51% of their pigs, while those receiving 15% alfalfa meal weaned 81% of their pigs. Research at Wisconsin (15) and Illinois (11) also demonstrated the superiority of 15% alfalfa meal over the 5% level.

In a study at Purdue University (18), gilts in confinement fed a ration of corn, soybean meal, minerals and vitamins A and D during pregestation and gestation weaned 40% of their pigs while gilts which were fed 15% dehydrated alfalfa meal weaned 84% of their pigs.

More recent research at Ohio (16) has indicated that a gestation diet which contained 18% of sun-cured alfalfa meal furnished a factor or factors which favorably influenced ovulation rate and the post-natal survival of the litter.

Kentucky researchers (10) recently reported that the addition of 15% dehydrated alfalfa meal to the gestation ration of gilts confined to concrete increased the number of live pigs farrowed as compared to the controls.

Illinois workers (7) added 10% dehydrated alfalfa meal to a purified diet and they found that 88% of the alfalfa-fed sows weaned litters as compared to 55% of the sows fed the control diet.

Research has shown that one of the "plus factors" of dehydrated alfalfa meal is its content of growth and reproduction factors, Because of this, hand-fed gestation rations should contain 10-15% of "dehy," and self-fed gestation rations should contain 5-10% in order to supply the pregnant animal with at least .5 lb. of dehydrated alfalfa meal or pellets daily. This amount will assure an adequate intake of the unknown factors essential for maximum ovulation rate, birthweight and livability of newborn pigs. Table 1 contains suggested levels of dehydrated alfalfa to add to swine rations for confinement feeding.

Gestation Rations

Dehydrated alfalfa meal has received considerable attention as an ingredient to assist in the regulation of self-fed gestation rations. In a Purdue experiment (3), 35% dehydrated alfalfa meal and 15% ground corn cobs resulted in a good self-fed gestation ration containing 13% fiber. In the same trial, a ration containing 15% dehydrated alfalfa meal and 35% ground corn cobs gave similar results but with a slightly lower feed cost.

Montana researchers (17) reported good results when 50% of sun-cured alfalfa meal was included in a self-fed gestation ration for sows and gilts. Dehydrated alfalfa meal must compete with certain sources of fiber when used at levels above that required for maximum nutritional performance.

Feed requirements of lactating swine are approximately twice those of swine during gestation. Not only quantity but also quality of feed is important during the lactation period. Extensive use of centralized farrowing facilities has greatly reduced the role of pasture as an important feed for stimulating milk flow in swine. Five to 10% of dehydrated alfalfa meal is recommended as the "pasture substitute" in lactation rations for sows and gilts during the period of confinement.

Some "negative factors" become "plus factors" when dehydrated alfalfa meal is added to complete rations and protein supplements for growing-finishing swine. Since the pig is a monogastric animal, it cannot utilize forages as efficiently as the ruminant. However, in certain areas concentrate feeds are relatively high priced, and dehydrated alfalfa meal is being used to replace a part of the concentrate in the ration.

Nevada research (12) showed that 1 lb. of alfalfa replaced nearly 1 lb. of grain in rations containing as high as 50% alfalfa meal. However, California studies (8) have shown that alfalfa meal has a TDN value which is 34 lb. less per 100 lb. than barley, and that 1 lb. of alfalfa meal used in their experiments replaced .28 lb. of concentrate. In this study, levels of 5%, 20% and 40% alfalfa meal were added to rations which were fed in meal form. It is reasonable to believe that the replacement value would have been higher if the rations had been fed in a pelleted form. The relatively low TDN value of dehydrated alfalfa meal has been shown by a number of experiments (2, 5, 13) to be a definite aid in the production of leaner pork. In areas of high-priced concentrates, dehydrated alfalfa meal will find wider use as a substitute for a part of the concentrate in a complete pelleted ration and at the same time a carcass with more meat and less fat will be produced.

Dehydrated alfalfa meal has been referred to as having a somewhat

(Turn to SWINE, page 22)

TABLE 1. Suggested Levels of Dehydrated Alfalfa Meal in Swine Rations for Confinement Feeding

Type of ration	Level of alfalfa, %	Remarks
Gestation, hand-fed complete mix*	10 to 15	6 lb. of gestation ration with either of these levels will assure a daily intake of .5 lb.
Gestation, self-fed	5 to 50	The lower level is nutritionally adequate and higher levels are used to reduce caloric intake.
Lactation ration	5 to 10	Extensive use of centralized farrowing facilities makes the addition of dehydrated alfalfa meal necessary.
Sow supplement	20 to 25	Additional alfalfa meal will often be added when the supplement is mixed in the gestation ration.
Pig starters	0	Sources of growth factors other than alfalfa meal are suggested.
Complete rations for growing-finishing	up to 5	Higher levels will aid in producing a carcass with more lean and less fat.
Protein supplements for growing-finishing	5 to 15	A level of 10% not only supplies many essential nutrients but aids in regulating free-choice supplement consumption.
For replacement stock	5 to 10	It is considered sound nutrition to provide replacement gilts and boars with dehydrated alfalfa meal.

*Another popular method of hand feeding sows during gestation is to feed 4.5 lb. of corn, 1 lb. of a 32-33% protein supplement and .5 lb. of dehydrated alfalfa pellets per head daily.

Alfalfa in Beef Cattle Feeding

A Summary of Experiments with Alfalfa in Various Types of Wintering and Fattening Rations

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Alfalfa as a crop is adaptable to large areas of the country, and it has earned a reputation as being a standard of reference for comparing the feeding value of forages for cattle. Besides its versatility and soil building characteristics, alfalfa ranks high in the productivity of nutrients per acre and its ability to supply the necessary nutrients to support normal growth, reproduction and a certain amount of fattening of beef cattle.

The nutrient composition and the digestibility of the carbohydrate, protein and minerals contained in alfalfa have been under study for many years, but the indication that alfalfa contains unidentified nutrient growth promoters for the rumen microbiota has created a special interest in this feedstuff in recent years. Several research workers have shown that alfalfa and fractions of alfalfa (water extract and ash) stimulate digestion of low-quality roughages such as corn cobs, cottonseed hulls, oat hulls, straw and some hay. Dehority et al. (1) at the Ohio Experiment Station reported that the cellulolytic factor activity of alfalfa extract (also yeast extract and casein hydrolysate) was due to its content in the amino acids valine, proline, leucine and isoleucine.

SPECIAL ALFALFA REPORT

This report is primarily concerned with a brief summary of some of the results of feeding experiments wherein alfalfa hay or dehydrated alfalfa meal served as a major ingredient in the ration and as the supplement, in whole or in part, to various types of wintering and fattening rations. Although the specific objective of the experiments reported was not to evaluate alfalfa as a source of unidentified factors for ruminants, the results make it possible to evaluate alfalfa on this basis in many of the experiments.

Alfalfa as an Energy Source

For the Breeding Herd—The use of alfalfa pasture, soilage, hay and silage as the major or only source of energy nutrients in the ration for the breeding herd is a common practice in areas where there is a plentiful supply. These forms of alfalfa furnish an ample supply of energy for this type of production. Deficiencies of protein, minerals and vitamins are rare even when the alfalfa is rather low quality. The most serious problem is that of bloat with the pasture, soilage and hay.

In Wintering Rations for Calves—A feeding system frequently followed in production of yearling feeders is wintering for gains of about .75 to 1 lb. daily followed by pasturing for one season. Many types of rations, usually high in roughage, are satisfactory for this feeding system. Most of those composed of non-legume roughages require some protein supplement.

EDITOR'S NOTE: Dr. Embry is professor of animal husbandry and Dr. Bentley is dean and director, Agricultural Experiment Station, South Dakota State College, Brookings.

Two wintering feeding trials were conducted at the South Dakota Experiment Station (2) in which steer calves were wintered on alfalfa hay as the only feed other than free choice trace mineral salt and bone meal. The calves had an initial weight of about 440 lb. and were fed for 152 days. They consumed an average of 14.2 lb. of the hay and made an average daily gain of 1.03 lb. This gave a gain of 145 lb. per ton of hay fed (1,383 lb. hay per 100 lb. of gain). Similar results have been reported by the Nebraska Experiment Station (3, 4). Gains by calves fed good quality alfalfa hay may approach 1.5 lb. daily without grain feeding (5).

At usual prices for alfalfa hay, it can be an economical feed as the only ingredient in the ration for wintering calves. Such rations contain a surplus of protein, and the alfalfa can generally be used more efficiently in limited amounts to supply the optimum protein needs. Dehydrated alfalfa used in this manner should be considered a protein supplement rather than any major source of energy.

In Growing and Fattening Rations—When alfalfa is fed in liberal amounts along with salt and a phosphorus supplement in rations for fattening beef cattle, the only limiting factor appears to be energy. Phosphorus may be adequate in many of the rations, but a supplement is generally advisable.

Several experiment stations have reported that beef cattle gain rapidly and efficiently when the ration contains high levels of roughages such as alfalfa forage and corn silage. Additional protein supplement was not beneficial when the ration contained about 25% alfalfa hay with ground shelled corn in a series of fattening trials with calves at the Nebraska Experiment Station (Annual Feeders' Day Reports 1955-1958). This amount of hay (5-6 lb.) appears rather low to supply the protein requirement with a full feed of corn, and it would have to be of excellent quality.

TABLE 1. Results of Steer Feeding Trial With Different Amounts of Coarsely Ground Alfalfa Hay in the Ration.

(167 Days—Initial Weight Approximately 605 lb.)

	—Level of ground—alfalfa hay		
	50%	35%	20%
No. of steers	70	70	70
Av. daily gain, lb.	2.44	2.49	2.60
Feed 100 lb. gain, lb.			
Total ration	1,000	906	817
Ground alfalfa hay	500	317	163
Concentrates	500	589	654

A cattle fattening trial at the South Dakota Experiment Station (6) compared rations containing 50, 35 and 20% coarsely ground alfalfa hay along with various feed additives. The concentrate portion of the ration was rolled shelled corn and a pelleted corn-soybean meal supplement fed at 9% of the total ration. The roughage and corn were mixed together and all the rations were equalized at about 12% total protein by adjusting the protein content of the supplement. Results of the trial after 167 days are shown in Table 1.

The rate of gain was increased slightly by feeding more concentrates and less roughage. Feed efficiency was improved to a greater extent than was the rate of gain by feeding more concentrates. However, the higher levels of alfalfa hay resulted in a considerable saving in concentrates per 100 lb. of gain. When the 50% alfalfa hay ration is compared with the 35 and 20%, there was a saving of 49 and 46 lb. concentrates for each 100 lb. of additional hay fed with the 50% roughage ration. These results indicate that high levels of alfalfa would often be economical in fattening rations especially when additional credit is given for the protein furnished. The ration with 50% roughage was not supplemented with additional protein. The 35 and 20% roughage rations contained 9% of a 20 and 30% protein supplement, respectively.

In another experiment at the South Dakota Experiment Station, 78 yearling steers, averaging about 625 lb., were full-fed alfalfa-bromegrass and alfalfa haylage (low-moisture silage) for 91 days (7). Trace mineral salt and a mixture composed of three parts dicalcium phosphate, one part limestone and one part trace mineral salt were offered free choice. The cattle consumed an average of 32.9 lb. of haylage with 58.6% dry matter (19.3 lb. dry matter) and made an average daily gain of 2.18 lb. Dry matter required per 100 lb. of gain was 883 lb.

The high consumption of dry matter probably accounts for the good rate of gain and feed efficiency obtained in the experiment. This was probably possible because of the low moisture content of the forage and a fast rate of digestion of the soft pliable forage. Grinding and pelleting is another means of increasing rate of passage and feed consumption. Grinding alone may increase rate of passage, but the fine dusty material generally accompanying grinding reduces palatability.

There has been a considerable amount of interest in pelleted rations for beef cattle in recent years. The results of experiments have not always been in agreement, but pelleting generally results in faster gains and improved feed efficiency with high-roughage rations.

According to California workers (8, 9) pelleting does not increase the value of a pound of hay. Results of many other experiments support this conclusion. Improved gain and feed efficiency apparently come about by increased consumption. Density of the hay is increased considerably by grinding and pelleting. This fact, along with faster rate of passage of the finely ground material, seems to account for the greater consumption.

In the work at the South Dakota Experiment Station with low-moisture silage (haylage), the rate of gain and feed efficiency obtained are quite similar to many of the experiments reported with all-roughage pelleted rations. A good rate of gain can be obtained with a high-roughage ration, if the animals consume enough feed.

Alfalfa as a Protein Source

When alfalfa is fed in large amounts to furnish a major part of the energy in the ration, protein will be furnished in adequate amounts. However, when fed in limited amounts to supply only the supplementary protein needed, a high protein content is desirable. Since high-protein ingredients are usually more expensive than low-protein ingredients, extra value should be given to the protein contained in alfalfa.

Research work has shown that stage of maturity when harvested is one of the most important factors affecting the nutritive value of forages. In order to preserve the high nutritive content of early-harvested forages, they must be harvested, processed and stored in a manner to minimize losses. Losses in field curing seldom run less than 15% and losses of 25% or more commonly occur year after year. Dehydration along with modern means of storage gives high retention of the original nutrients. Dehydrated alfalfa and high-quality sun-cured alfalfa may contain as much protein as some protein supplements. Samples of alfalfa as high as 30% protein have been analyzed at the South Dakota Experiment Station.

For the Breeding Herd—The rations for beef cattle breeding herds, particularly commercial herds, consist largely of roughages. When not on pasture, the rations are often made up of low-quality roughages. Enough energy will be furnished, in most cases, if there is an adequate amount of protein, carotene or vitamin A and minerals.

Alfalfa hay or silage is an excellent supplement to low-quality roughages. Work at the Oklahoma Experiment Station (10) with wintering cows on the range showed that 8 lb. of alfalfa hay satisfactorily replaced 2.5 lb. of cottonseed cake. When wintering grazing is short, a higher value could be given to alfalfa hay because of the energy it would furnish when fed to supply the protein requirement.

If a surplus of wintering pasture and other low-quality roughages is available, it may be desirable to limit supplemental feeding as much as possible to make maximum use of the low-quality feeds and for convenience in feeding. Pelleted, high-protein supplements are often fed in these instances. Dehydrated alfalfa is a common ingredient in many of these supplements. However, winter-

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Alfalfa Carotene as Vitamin A Source for Poultry

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Carotene is a valuable and proved source of vitamin A for chickens.

Broiler strain chicks, depleted of their initial body vitamin A stores, have gained 3 lb. or more between the second and ninth weeks with a feed conversion ratio of 2.1, using carotene in alfalfa meal as the sole source of vitamin A (1b). Layers have been grown and gone through a full year of egg production using only carotene as the source of vitamin A (1a).

Some of these results, furthermore, were obtained with vitamin A depleted chicks using even less vitamin A than listed as the NRC requirements (2). The findings are in harmony with most published nutritional data from the past 40 years of vitamin A research and refute some recent reports that carotene is poorly used and of limited value as a vitamin A source for chicks.

As early as 1919 it was suspected that carotene, found in leaves and other natural products, was vitamin A active (3), but shortly doubts arose (4). By 1925, however, it had been established that alfalfa was a rich source of vitamin A activity, and that activity seemed to be associated with carotene. In 1928, it was demonstrated that vitamin A activity of as little as .005 mg. carotene per day supported good growth of rats (5). Then, in 1929, it was proved that carotene was converted to vitamin A in the animal body by feeding carotene to vitamin A depleted rats and finding appreciable quantities of vitamin A deposited in the livers (6). It is of interest that this development came 98 years after the chemist first isolated carotene from plant tissue without realizing its nutritional value.

A study reported in 1923, in which an alfalfa extract was used as a source of fat soluble A (vitamin A), was probably the first to demonstrate clearly that chickens required this nutritional factor (7). By the early '30s, dried or dehydrated alfalfa had been used successfully as a vitamin A source in several poultry investigations.

Recent Results Using Alfalfa Meal as the Vitamin A Source—Parrish and Mitchell (8) obtained a gain of 2.2 lb. and feed conversion of 2.7 from the second through the ninth weeks on feeding 400 units vitamin A per lb. feed, as dehydrated alfalfa meal, to vitamin A depleted Hy-Line males. Gain was 2.35 lb. and feed conversion 2.7 on 2,000 units vitamin A activity per lb. feed. In studies using vitamin A depleted light strain Hy-Line males and a high energy feed (24% protein, 1,060 Cal. productive energy), Shellenberger, Parrish and Sanford (1b) obtained gains and feed conversions shown in Table 1 using alfalfa meal as the only source of vitamin A.

On the same high energy feed using vitamin A depleted meat strain chicks (Cornish x White Rock), the results shown in Table 2 were obtained.

In the studies cited above, and others from our laboratories, only a small storage of vitamin A in livers and blood was obtained until more than 700-800 units vitamin A per lb. feed were fed. However, there is no real proof that substantial vitamin A storage is needed for optimum growth by chickens obtaining constant vitamin A intakes as they do in modern types of feeds. While heavy breed chicks getting less than 800 units vitamin A/lb. feed grew well, eye lesions associated with vitamin A deficiency, ranging from a slight to mild degree of severity, sometimes have been observed.

SPECIAL ALFALFA REPORT

Several earlier studies have shown that young chicks could utilize carotene as a source of vitamin A by the end of the first week, although one investigator stated that it was ineffective unless chicks were three weeks old. Working at Kansas State, Harvey et al. (9) fed dehydrated alfalfa as the only source of vitamin A to chicks less than 12 hours old, and found that they converted carotene of this source to vitamin A during the first day of life and that it was used to support physiological functions involving vitamin A by at least the fifth day and probably earlier.

Carotene in alfalfa meal has been used successfully with layers over extended periods. In work reported by Shellenberger, Parrish and Sanford (10), Leghorn pullets were fed diets containing 2,000 units vitamin A/lb. as alfalfa meal starting at 18 weeks of age. In this work, feeds were prepared at approximately monthly intervals. The production on a hen-day basis for seven months was 65%, even when no antioxidant or other protective measures were used. After four months' production, eggs were collected to check reproduction. Ninety percent of the eggs hatched and all chicks were entirely normal when the experiment was discontinued after two weeks.

Another study (1a) was unique in that newly-hatched chicks, depleted for one week, received only carotene in alfalfa meal as the vitamin A source throughout the periods of growth plus one full year of egg production. There was no culling or special selection for production. The results are in Table 3.

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TABLE 1

Vitamin A units/lb. feed	400	600	800	2,000
Lbs. gain 2-9 weeks	2.0	2.1	2.1	2.2
Feed conversion ratio	2.6	2.6	2.5	2.7

TABLE 2

Mixed Sexes				
Vitamin A units/lb. feed	350	525	700	1,750
Lb. gain 2-9 weeks	2.3	2.7	2.9	3.0
Feed conversion ratio	2.3	2.1	2.1	2.2
Males				
Vitamin A units/lb. feed	400	600	800	2,000
Lb. gain 2-9 weeks	3.0	3.3	3.2	3.6
Feed conversion ratio	2.1	2.1	2.2	2.1

These results indicate that Leghorns can do well on carotene of alfalfa as the sole source of vitamin A through the periods of growth and a full year of production, even when feeds are not entirely consumed until one month after mixing.

Recognition of Value of Carotene of Alfalfa as Vitamin A Source—The subcommittee on poultry nutrition, NRC, recognized that equal unitages of both vitamin A and provitamin A served to meet the requirements of poultry (2). Studies reported in the earlier literature indicated that the requirement for chicks was less than 1,000 units per lb. feed when carotene of alfalfa supplied the vitamin A activity and, for laying hens, 1,200-1,600 units per lb. In a few reports, higher requirements were shown, but sometimes the design of the experiment did not allow a clear distinction between stability in the feed and utilization by the chicken. Practical experience over many years has added solid support to use of alfalfa as a vitamin A source.

Carotene Utilization—Recently some commercial testing reports stated (11) that carotene is poorly utilized and not an adequate source of vitamin A activity. In analyzing these reports, the following things have been noted: Poorest results were when carotene was used as a wax stabilized product. It is not known whether the carotene was in solution and easily assimilated or whether it was present as a microcrystalline emulsion which might be poorly absorbed and utilized. In the same experiment, carotene of alfalfa meal was utilized better. The stabilized carotene product contained antioxidants, the effects of which need further study in view of an earlier report that high concentrations of antioxidant interfere with conversion of carotene to vitamin A. In another report, there was not a direct comparison using preformed A and provitamin A; all comparisons were only to a basal diet, the carotene content of which was an estimate. In some studies of utilization of carotene in alfalfa, liver storage tests and high supplementation levels were used. Although the chicks ingested similar quantities of vitamin A of different sources, no information was given on percentage of alfalfa in the diet. Bulkiness and nature of feed ingredients affect utilization of nutrients, including provitamin A. In reporting the ineffectiveness of carotene and carotene in alfalfa, the investigators might have considered the earlier literature and attempted to explain differences noted.

Although high level supplementation and short time liver storage accumulations are useful in testing vitamin A stability and relative absorptions, they probably are of limited value in determining utilization at normal or restricted feeding levels. Some seem to have inferred from those tests that a high level vitamin A storage was needed for good productive performance. Some studies with carotene of alfalfa at high levels make it appear less potent than other sources, whereas it has compared favorably at the lower practical supplementation levels.

Provitamin A and Preformed A—It was pointed out years ago that equal unitages of preformed vitamin A and of carotene in bulky forages were not of equal efficiency as a vitamin A source for most farm animals. That, however, seldom causes a problem, since intake of carotene when animals are on good forage is far in excess of requirements. But, using high grade and potent sources of carotene, it was found that for poultry .6 mg. carotene equalled 1 unit of vitamin A activity, the same as for the rat (2). These relations suggest that in metabolism only half of the carotene molecule is converted to vitamin A. At least three investigations have indicated that under

TABLE 3

Units vitamin A/lb. feed	500	750	1,000	1,500	2,000
Production in January,* %	35	53	64	75	76
Year's production,† %	12	22	44	49	46
Hens living for full period, %	23	31	78	78	67
Hatchability after 5 mo. production, %	19	22	37	598	92
Chicks surviving and healthy to 28 days age, %	37	17	62	95	94

*Highest production month.
†All hens laying at least one egg are included in figuring averages.
‡Low results largely due to one hen only.

certain conditions carotene may be as active, or almost as active, as an equal weight of vitamin A. Even with half the molecule lost in metabolism, carotene is practically as active as the widely used synthetic vitamin A palmitate. The activity of beta carotene is 1,670 000 units per gram and of vitamin A palmitate, 1,818,000 units per gram. Most of the vitamin A activity of alfalfa is from beta carotene, with alpha carotene and cryptoxanthin contributing at best only a few percent of the total.

Comparison of costs of vitamin A from alfalfa and the various vitamin oils and stabilized products is difficult. Based on vitamin A value alone and present market prices, the highest grades of alfalfa supply vitamin A at a cost of from less than the more expensive stabilized vitamin A products to about 2½ times the cheapest. It must be remembered that, when one buys a vitamin A supplement, he gets only vitamin A, whereas from alfalfa meal he gets a vitamin A source plus many other factors.

The Plus Factors of Alfalfa Meal—It has been said that alfalfa meal is worth $150 per ton or more, based on trade prices of nutrients contained. In addition to carotene or provitamin A value, alfalfa meal contains excellent quality protein, as well as minerals and vitamins. It is a good source of the B-complex water-soluble vitamins, such as riboflavin, pantothcnic acid, niacin and folic acid (12). The feeding of alfalfa meal has reduced a hemorrhagic condition resembling the avitaminosis K syndrome (13).

Alfalfa meal has been used in poultry broiler feeds for obtaining a desirable yellow pigmentation of the skin. This has been especially useful where sorghum grains have been the source of energy. Alfalfa meal in layer feeds helps produce dark yellow egg yolks desired by the egg breaking industry.

Numerous agricultural experiment stations have demonstrated that a most valuable "plus" of dehydrated alfalfa meal is an unidentified factor or factors. The factor(s) does not appear to be related to the ash, amino acids or glucuronic acid in alfalfa (14). Alfalfa juice has been shown to contain a growth-stimulating factor, and it also has been reported that dehydrated alfalfa meal contains an unidentified factor necessary for fertility and hatchability (15).

Fitting the Meal to the Ration—Interest has developed in use of more bulky and fibrous feeds for growing replacement pullets, and some feeds of that type are on the market. Since the fiber content of alfalfa meal varies from 18-30%, it can be used like oats as an extender in feeds. The lower grades of alfalfa, with lower carotene contents, will serve this purpose. Controlled feeding enables the poultryman to full feed his birds, yet restrict nutrient intake, particularly energy, to delay maturity or to produce a pullet or maintain a laying hen with less fat (16). Full feeding an extended complete ration is probably a more practical method of controlling nutrient intake than limiting the time feed is available to the birds.

In preparing modern high energy feeds, best results will be obtained when high-quality alfalfa meals are used. If all vitamin A activity is supplied by alfalfa, use of low-quality meals may add more than 1% fiber to the feed and lower the energy content. But with high quality, 100,000 unit meals, less than .4% fiber would be added when 2 000 units vitamin A activity per pound of feed are added. The highest quality meals available would add even less fiber.

Protecting Quality—Alfalfa carotene in alfalfa meal is not so stable as some special vitamin A products, stability should be viewed with respect to intended uses and requirements. If unprotected, alfalfa meal may lose as much as 20-30% of vitamin A value per month in the summer time. The stability of the vitamin A activity of alfalfa meal is enhanced when the meal is mixed into many feeds, including poultry mashes. For example, Shellenberger, Parrish and Sanford (10) found only a 10% loss of carotene in a laying mash kept at room temperature for one month. Use of antioxidants, oils and heat treatment in preparing meals reduces losses of carotene in alfalfa meal by more than one-half that of unprotected meals (17). Parrish and Mitchell (8) found that this treatment did not affect utilization of carotene in the meal by the chicken. Inert gas storage is the principal commercial method of preserving vitamin A activity of alfalfa meal.

The vitamin A activity needed by the animal must be in the feed as manufactured and delivered. Sometimes in the trade, alfalfa has been accused of being a poor source of vitamin A for poultry when the real fault was that a poor-quality, low-carotene meal was used in the first place, or carotene was destroyed by methods used in processing the feed, or the feed was stored for too long a time. Vitamin A activity of feed delivered should be known regardless of the source of vitamin A used. Conclusions on utilization should be based on the vitamin A content at the time feed is placed before the animal.

In modern commercial poultry production, feeds usually are consumed within a few days after mixing, and in such feeds stability of vitamin A or provitamin A is not a serious problem. But feeds stored for several weeks lose vitamin A activity, whether it is supplied by alfalfa or some other source. Storage of feeds is not a good practice. Besides vitamin A, other important nutrients are lost, leading to unprofitable results.

High-quality alfalfa meal is a valuable feedstuff. It has high vitamin A activity, as well as an abundance of many other nutrients. When properly handled through the various processing steps, the feeder receives these nutrients at an economical price.

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SWINE

(Continued from page 19)

negative palatability rating. In certain swine feeds, this is a disadvantage, but, in protein supplements, this is a definite "plus factor." During 1960, close to one-half of the growing-finishing hogs in the Midwest will receive shelled, cracked or ground corn and protein supplement free choice. The palatability of the protein supplement must be such that the pigs will not consume more than .75 lb. daily. At the present time, the addition of at least 10% of dehydrated alfalfa meal is one of the best ways of reducing the palatability of a protein supplement that is high in soybean meal. Until other methods of reducing the palatability of protein supplements are found, dehydrated alfalfa meal will continue to receive an affirmative vote because of its negative palatability rating.

All of the various vitamins such as pro-vitamin A, riboflavin and pantothenic acid as well as the favorable amino acid balance of dehydrated alfalfa meal have long been recognized as plus factors. However, these nutrients alone cannot be expected to keep dehydrated alfalfa meal in the favorable position in swine rations which it now enjoys.

For example, during the past few years, a number of experiments (1, 4, 6, 14) have shown that it is not absolutely essential that dehydrated alfalfa meal be added to growing-finishing swine rations for most rapid, efficient and economical gains. However, it is doubtful if any single feedstuff possesses as many plus factors as does "dehy." Consequently, in the formulation and manufacture of swine feeds it is essential that all of these factors in dehydrated alfalfa meal be carefully considered. As more and more swine are raised in complete confinement and as nutrition research advances, there will undoubtedly be a shift in the levels of dehydrated alfalfa meal that are needed to provide nutritionally adequate diets. In the future, it would appear that a larger percentage of dehydrated alfalfa meal will be used in pregestation, gestation and lactation rations and a smaller percentage will find its way into growing-finishing rations of swine fed for market.

v v

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BEEF CATTLE

(Continued from page 20)

ing experiments with the breeding herd in which there has been a strict comparison between dehydrated alfalfa and other high-protein ingredients seem to be rather limited. The work in which various comparisons of dehydrated alfalfa meal have been made with other protein supplements show that dehydrated alfalfa meal is at least equal on a protein-equivalent basis. Any additional value seems to depend on the quality of the roughage and the mineral and vitamin content of the ration.

In Wintering Rations for Calves—A number of feeding trials have been conducted to compare alfalfa hay with common protein supplements as a source of protein. A wintering trial with steer calves at the South Dakota Station (1) gives rather typical results. Alfalfa hay (16.6% protein) and soybean oil meal (44% protein) were compared as protein supplements with prairie hay (6.8% protein). The results are shown in Table 2.

TABLE 2. Winter Gain and Feed Efficiency Of Calves Fed Alfalfa Hay and Soybean Oil Meal as Protein Supplements to Prairie Hay.

(Average of Two Trials—152 Days; Initial Weight About 440 lb.)

	Prairie hay alfalfa hay	Prairie hay SBOM pellets
No. of calves	19.4	18.4
Av. daily gain, lb.	.73	.74
Av. daily ration, lb.		
Alfalfa hay	4.1	...
Prairie hay	9.5	12.7
Soybean meal pellets	...	1.1
Feed per 100 lb. gain, lb.		
Alfalfa hay	563	...
Prairie hay	1,301	1,721
Soybean meal pellets	...	149
Per cent total protein in ration	9.77	9.80

The total amount of feed fed and the protein content of the rations for the two lots of calves were nearly the same. When fed in this manner, the rate of gain was about the same. Alfalfa hay and soybean meal pellets when fed on an equivalent protein basis were equally effective in supplementing the low-protein prairie hay. The feed replacement value of the alfalfa was 4 lb. of alfalfa hay equal to 3 lb. prairie hay and 1 lb. of soybean meal pellets.

The above experiment shows that alfalfa hay is a satisfactory protein supplement to low-protein hay for wintering calves. Alfalfa hay may not be available under some conditions or the feeder may wish to use a maximum amount of low-quality feeds. In these instances, a high-protein supplement is indicated. Protein, vitamin A or carotene and mineral composition of the supplement and its effect on the digestion of other nutrients will influence the value of the supplement with these kinds of rations.

Experiments at the Purdue Experiment Station (11) showed that .5 lb. of dehydrated alfalfa meal per steer daily included in Supplement A stimulated gains when a corn cob ration was fed. The increased gain appeared greater than could be accounted for by the protein, carotene and cobalt which would have been supplied by the dehydrated alfalfa.

Dehydrated alfalfa meal appears more valuable with roughages such as corn cobs and cottonseed hulls than with prairie hay. Only a small increase in rate of gain was obtained when dehydrated alfalfa meal replaced cottonseed meal on a protein-equivalent basis in a series of trials with wintering calves at the Oklahoma Experiment Station (12). In South Dakota trials, dehydrated alfalfa meal resulted in no improvement in digestibility of prairie hay over that obtained with soybean meal (13). With these rations dehydrated alfalfa should be considered as a supplement on the basis of cost of protein, carotene and minerals.

In Growing and Fattening Rations—Some experiments have been reported in which dehydrated alfalfa as meal and as pellets replaced part of the roughage in the ration, and the protein and energy content of the rations were allowed to vary. Consideration of the value of dehydrated alfalfa as a protein supplement is given here only when it has been used primarily as a replacement for other high-protein ingredients in the ration.

A rather extensive series of cattle fattening trials were conducted at the Oklahoma Experiment Station (14) to compare protein supplements with rations composed of milo and corn or sorghum silage. Thirteen supplemental mixtures, including alfalfa hay and dehydrated alfalfa meal, were compared on a protein-equal basis. None of the supplements

proved superior to soybean oil meal. Alfalfa hay and dehydrated alfalfa meal gave about the same results as the soybean meal. Thus, it appears the value of alfalfa in the protein supplement with fattening rations composed of grain and good quality corn or sorghum silage will depend upon its cost as a source of protein in relation to other high-protein ingredients.

Two feeding trials with fattening cattle at the Nebraska Experiment Station (15, 16) showed increases in rate of gain when dehydrated alfalfa meal or pellets were used to replace all or part of the soybean meal in a corn silage and ear corn or shelled corn ration. Improvement in gain amounted from about 6-17% in the various comparisons. The amount of corn silage fed was low (12-14 lb., in most cases) and apparently trace minerals were not fed.

A high grain (milo) and low silage (sorghum) ration was fed in a series of fattening trials at Oklahoma (17). When alfalfa hay or dehydrated alfalfa meal replaced one-fourth, one-half or all of the cottonseed meal used in the control lot, there was an improvement in gain in some years but not in others. In years when there was a response to the alfalfa, symptoms of vitamin A deficiency were noted in the lot not fed alfalfa. This did not occur in years when there was no response to the alfalfa. The workers concluded that the response to the alfalfa appeared to be due to its carotene content.

Ohio workers (18) reported that dehydrated alfalfa meal significantly increased rate of gain when used to replace soybean in a corn-and-cob meal and poor-quality hay ration. Alfalfa ash and trace mineral supplement also improved the rate of gain. The authors concluded that the mineral content of dehydrated alfalfa was largely responsible for the response obtained. In a later report (19), the Ohio workers concluded that good-quality hay contained some beneficial factor other than protein or trace minerals.

The results of some fattening trials have shown that balancing the ration for protein only may not be enough. A deficiency of trace minerals and/or vitamin A may be involved, especially if the roughage is of poor quality, and it is fed in limited amounts. Other beneficial factors may also be involved as mentioned previously (19). Supplementary sources of these nutrients are indicated when these conditions exist. Under such conditions, dehydrated alfalfa as the protein supplement or as an ingredient in the protein supplement should be considered from the standpoint of its content in trace minerals, carotene and other beneficial factors as well as protein.

In most of the cattle experiments with dehydrated alfalfa meal, it has been as effective as common high-protein ingredients in supplementing rations when fed on a protein-equal basis. A greater value than indicated by the protein content has often been obtained when dehydrated alfalfa meal was fed with low-roughage fattening rations and low-quality, high-roughage rations. As a supplement to these rations, it appears to furnish the beneficial factor(s) supplied by good-quality roughages.

♥ ♥

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FORAGE

(Continued from page 18)

in photoperiodic regulation in the plant material.

Swierstra (1958), at the University of British Columbia, designed a number of experiments to study the effect of exposure of different lengths of day-light (photoperiod) on the estrogenic activity of red clover. Although there was a marked difference in the character of growth of the experimental plant species and significant difference of forage yield, protein and crude fiber content, no definite increase or decrease of estrogenic activity was noted in the samples of plant material analyzed. Studies are continuing along this avenue of research at the university using different species of forage crops.

The significance of the estrogenic substance in forages commonly fed to farm animals has been the center of many discussions and merits further study. The work with synthetic D.E.S. definitely shows that certain estrogenic substances administered to animals in small amounts can affect feed consumption, feed efficiency and rate of gain.

Is the amount of estrogenic compounds in the various forage crops of sufficient magnitude to be either helpful or harmful to different species or different classes of a given species of farm animals? In 1946 Bennetts et al. (1946) noted that subterranean clover (Dwalganup strain) of Western Australia contained sufficient amounts of estrogen-like substances to affect adversely the reproductive performance of grazing ewes and to cause genital and mammary abnormalities in wethers. Other studies (Bartlett et al. 1948; Legg et al. 1950), indicate that the occurrence of the active substances in rapidly growing forages may be associated with increased milk secretion often observed during the spring pasture season ("spring flush"). The difference between the results of these investigations reflects the concentration of the estrogenic substances in the particular forage.

As Dr. F. N. Andrews of Purdue University wrote, "It would be undesirable to produce a plant with as much estrogenic activity as the Australian subterranean clover, but if a level of estrogenic activity could be obtained which would stimulate growth or other functions, it would increase the value of the plant." (Andrews, 1957.)

The present work at the University of British Columbia is directed to determine, in part, the mechanism of action of the estrogenic substance in various forages and how they compare with the mode of action of D.E.S.

Experiments completed to date reveal that under controlled conditions, oral administration of red clover extracts in aqueous medium to laboratory rats increases the thyroid uptake of radio-active iodide. This has been demonstrated using intact rats but more markedly using ovariectomized rats (Table 3) where the endogenous estrogen level is reduced. This work as well as further experimentation on this phase of the study will be reported in detail elsewhere.

The apparent stimulation of the thyroid gland by red clover extracts as well as by D.E.S. may be used to explain, in part, the various physiological responses attributed to the presence of the estrogenic substance in forages ingested by livestock.

TABLE 3. The effect of red clover extract on uterine weight and thyroid uptake of radio active iodide (12 rats per group).

Means	Control group.	Red Clover extract* group	Timothy grass extract group	D.E.S. 0.336 mcgm. per rat per day
Body weight (gms.)	117.4	110.5	119.8	115.9
Uterine weight; per cent body weight	0.024	0.046	0.022	0.047
Thyroid weight; per cent body weight	0.0065	0.0063	0.0064	0.0065
Converted counts per minute per unit weight of thyroid	866	1146	856	990

♥ ♥

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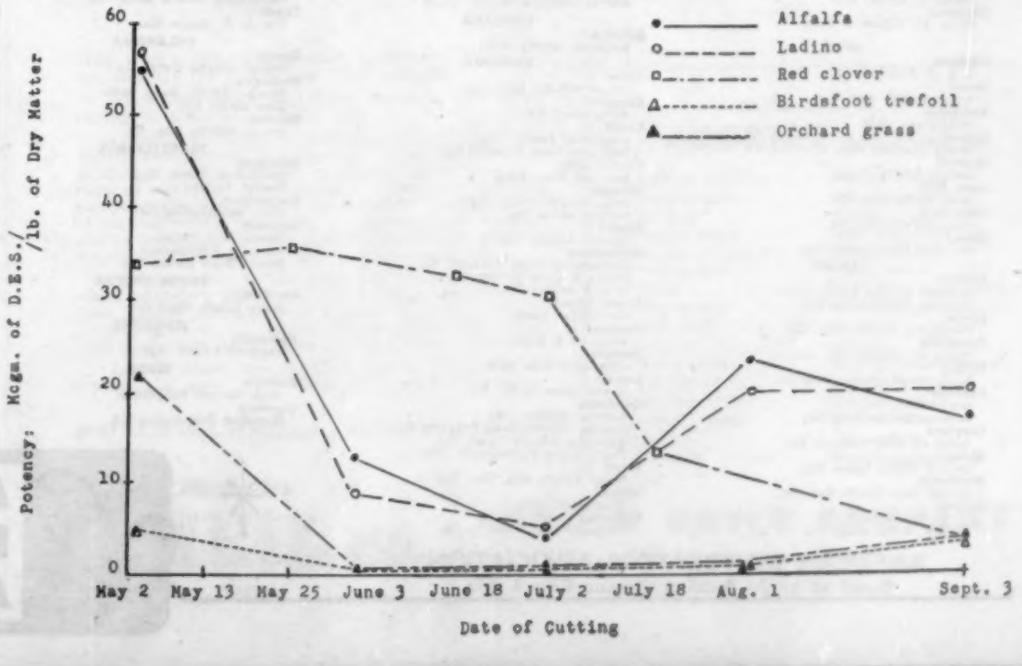
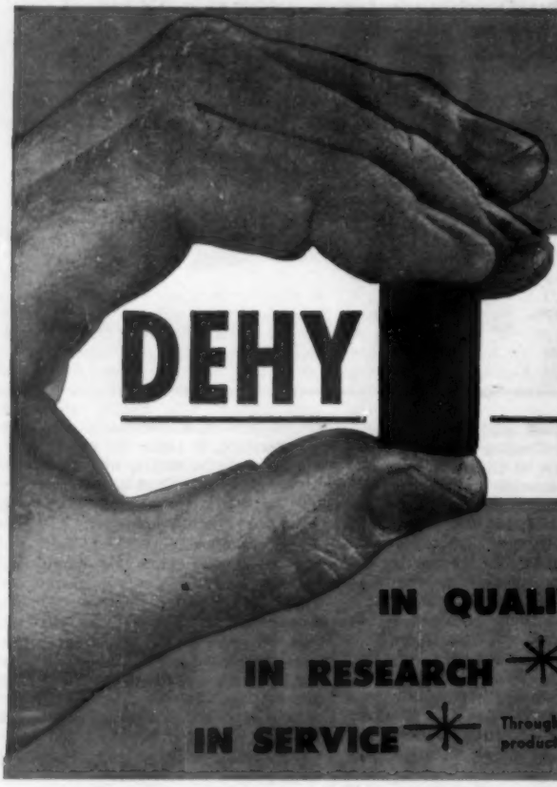
FIGURE 1. The estrogenic activity of second-year growth of different species of plants at various stages of maturity.





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Wakenda
Reimer Dehydrating Co.

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Belgrade
Belgrade Alfalfa Mills

NEBRASKA

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Columbus
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Cozad
Haymaker Feeds, Inc.
Nebraska Farm Products Co.
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Dehy Alfalfa Mills, Inc.
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M & R Milling Co.
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Columbus
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Deshler
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Fremont Alfalfa Mills, Inc.
Graytown
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WISCONSIN

Fountain City
Greshik Dehydrating Mill
Jackson
Harry C. Kissinger & Son
Mayville
Brummond's De-Hi Alfalfa Farms
Oakfield
Mammoth Springs Canning Co.

WYOMING

Casper
Natrona Feed Products Co.

AUSTRALIA

NEW SOUTH WALES

Hamilton—Steggles Pty. Limited

CANADA

ALBERTA

Edmonton—Northern Alfalfa Products Co.

BRITISH COLUMBIA

Chilliwack—Chilliwack Dehydrated Grasses Co-op.
Springbank Dehydration, Ltd.
Vancouver—Buckerfield's, Ltd.

ONTARIO

Brantford—Green-Life Proteins, Ltd.
Douglas—Campbell & McNabb
Renfrew—Ottawa Valley Grain Prod., Ltd.
Phanenhour Alfalfa Products
Schomberg—Schomberg Alfalfa Prod., Ltd.
Wallaceburg—Greenmalk Co., Ltd.
Woodstock—Hillview Farms, Ltd.

QUEBEC

LaPrairie—Luzerna, Inc.
Sainte-Rosalie Jct.—Societe Coop. Agricole de Sainte-Rosalie

ENGLAND

Stoke Ferry—Crouch Dehydrators, Ltd.

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Eure—Jean Renault, Herqueville par Saint Pierre

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Reports on Current Alfalfa Research

EDITOR'S NOTE: One of the major goals of the American Dehydrators Assn. is to seek out new uses for dehydrated alfalfa and to bring new knowledge on the product. The association fosters a program of research work to fulfill this aim. The Alfalfa Research Council guides this work. Under the council's guidance, the ADA has been sponsoring research at experiment stations with grants-in-aid. Some of the work of the past year is summarized below.

South Dakota

PROJECT: The value of artificially dehydrated alfalfa in dry lot rations for swine during growth, gestation and lactation.

LEADER: R. C. Wahlstrom.

PLACE: South Dakota State College, Brookings, South Dakota.

This investigation was designed as a long-term study in which the value of dehydrated alfalfa meal will be studied continuously from early weaning through reproduction and lactation with swine that are confined to concrete dry lot. Information is needed in this area with the increasing use of confinement feeding systems in our swine industry. A lack of research exists on the value of alfalfa when used in present day rations that are fortified with minerals, vitamins and antibiotics.

In this recently initiated study, data have been obtained only on the value of alfalfa for pigs from weaning to market weight. Data will be obtained on the reproduction and lactation periods as this experiment continues.

Ninety-six weanling pigs that had been reared continuously on concrete were allotted into 16 lots of six pigs each. Rations containing 0, 2.5, 5 and 10% of dehydrated alfalfa meal were fed both in meal and pellet forms. Two replicated lots received each alfalfa treatment in each ration form. The corn, soybean meal, tankage ration was supplemented with minerals, vitamins and an antibiotic. Alfalfa replaced a portion of all three of the major ingredients so that all rations were approximately equal in protein content.

The average daily gains and feed efficiency data are presented in Table 1.

TABLE 1. Alfalfa in Rations for Growing Swine

Alfalfa level	Average daily gain	Feed per cwt. gain
Meal ration		
0	1.58	307
2.5	1.60	306
5.0	1.64	317
10.0	1.50	328
Pelleted ration		
0	1.66	294
2.5	1.70	294
5.0	1.74	288
10.0	1.56	302

A small increase in rate of gain was obtained by feeding either 2.5 or 5% of dehydrated alfalfa meal in rations fed either in meal or pellet form. Feed efficiency did not appear to be affected by these levels of alfalfa. The 10% level of alfalfa decreased average daily gains and increased the feed required per unit of gain.

It appears that the higher level of alfalfa fed in this study decreases feed efficiency to a greater extent when the ration is fed in meal form than when fed in pelleted form. Carcass data were obtained from 45 barrows at a weight of approximately 200 lb. A slightly lower dressing percentage was obtained in the group of pigs fed the ration containing 10% of alfalfa. These carcasses also had less backfat and were longer than those from the other groups.

California

PROJECT: Methods of feeding dehydrated alfalfa pellets as a supplement to range sheep.

LEADER: W. C. Weir.

PLACE: University of California Agricultural Experiment Station, Davis and Hopland.

Pelleted, high-quality, dehydrated alfalfa had shown promise as a range supplement to moderately grazed dry summer range in two previous tests. The most recently completed trial demonstrated that such pellets were a suitable supplement on heavily grazed ranges as well.

While some of the unsupplemented control lambs died, either alfalfa pellets or cottonseed meal prevented death loss. Either supplement produced significantly greater gains during the five-month feeding period than those made by unsupplemented lambs. Wool production and yearling body size as determined by body weight and body measurements showed a lasting advantage for the supplemented groups six months after the differential feeding was discontinued.

The current trial is aimed at finding more feasible methods of providing pellets to range sheep. The pellets are being fed once, twice and five times weekly at the rate of 3.5 lb. of pellets per sheep per week. The trial is not completed but results to date look promising for the less frequent feeding of the supplement. In addition, the sheep graze on adequate dry range feed of low-protein and high-lignin content.

Another method of providing the supplement which is under study is that of limiting the intake by including salt in the pellet as an appetite inhibitor. Although the intake has been kept at approximately the desired level by this device, it has been necessary to use three different percentages of salt in the pellets during a four-month period. This appears to be a disadvantage of this method. An attempt to vary the percentage salt in the feed by mixing pellets containing 40% salt with similar pellets without any salt was unsuccessful. The sheep picked out the no-salt pellets and left the salt pellets.

Dehydrated alfalfa pellets as a source of protein and energy are being compared to high-protein soybean oil meal and to barley in the current trial. The 50% protein soybean meal is being fed at a level to provide the same amount of crude protein as furnished by the pelleted alfalfa. Barley is being fed to provide the equivalent amount of net energy as furnished by the alfalfa supplement. Body measurements, wool production and carcass composition of representative lambs at the start, at the end of the supplemental feeding period (December) and the end of the recovery period (May) are being used to evaluate the results of these studies.

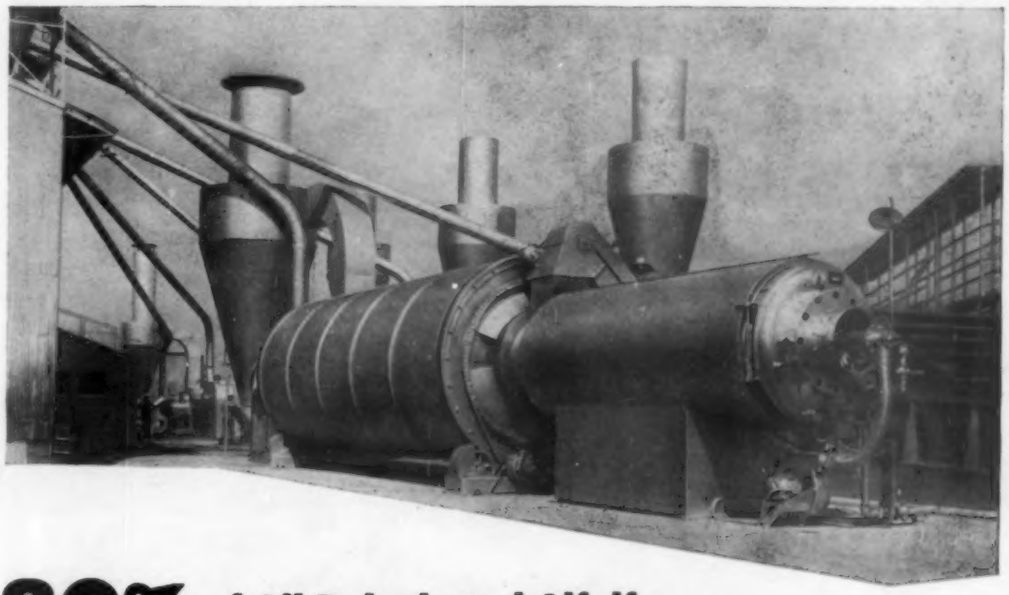
Michigan

PROJECT: The Nutritive Value of Artificially-Dehydrated Alfalfa Pellets for Dairy Cattle.

LEADERS: Leonard Brown, C. A. Lassiter and C. F. Huffman.

PLACE: Michigan State University, Kellogg Farm, Hickory Corners, Mich.

The purpose of this study is to



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Fish Meal
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Humus
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TABLE 2. Two Year Summary of Alfalfa Pellet Experiment. Objective I (Lactation Studies) 1957-59

	Groups			
	1	2	3	4
Levels of dehyd alfalfa pellets (lb./cow/day)	0	.75	1.50	3.0
Milk production:				
Initial milk (lb./cow/day)	29.2	29.4	30.2	29.2
Initial 4% FCM (lb./cow/day)	32.2	33.1	31.8	32.2
210 day milk (lb./cow)	4,698.9	4,861.2	4,892.1	4,844.1
210 day milk (lb./cow/day)	22.4	23.1	23.3	23.1
210 day 4% FCM (lb./cow)	5,278.5	5,574.5	5,322.2	5,391.3
210 day 4% FCM (lb./cow/day)	25.1	26.5	25.3	25.7
210 day average fat test	5.0	5.0	4.6	4.8
Average persistency	86.2	90.1	89.3	89.9
Body weight (lb./cow)				
Average initial body weight	905	908	916	860
Average end body weight	884	890	918	886
Average body weight change	—21	—18	+2	+26
Feed consumption (lb./cow/day)				
Average grain consumption	4.6	4.6	4.4	4.4
Average hay consumption	10.4	8.4	9.2	7.2
Average alfalfa pellet consumption	0	.7	1.5	3.0
Average silage consumption	35.5	37.2	36.6	37.5
Average roughage D.M. consumption	20.2	19.6	20.8	20.7

evaluate dehydrated alfalfa pellets as a roughage supplement to a grass-hay-corn silage ration when fed to dairy cattle. Information is needed in this area since there is a trend toward a greater use of corn silage in the rations of dairy cattle and quite often the dairyman is faced with the problem of low quality hay.

Information was needed as to whether the performance of such a ration could be improved by feeding a limited quantity of dehydrated alfalfa pellets. These studies have the following objectives: (1) to obtain information on the value of artificially-dehydrated alfalfa pellets as a supplement to a grass-hay-corn silage-grain ration for milk production; (2) to determine the effect of supplementing a hay-corn silage-grain ration 30 days prior and 60 days following calving on the peak of milk production, and (3) to observe the time required for cows to consume artificially-dehydrated alfalfa pellets fed with grain in a milking parlor.

OBJECTIVE 1—Sixteen Guernsey cows were selected that were at least 60 days in lactation and divided into four comparable groups. All cows were fed 40 lb. of corn silage and 12 lb. of a medium quality timothy hay per day after adjusting for the amount of alfalfa pellets fed. Grain was fed according to production (U.S. Department of Agriculture rates for feeding grain) after correcting for the amount of grain in the corn silage.

Group 1 cows were fed 12 lb. of hay and no pellets; group 2—11.25 lb. of hay and .75 lb. of pellets; group 3—10.5 lb. of hay and 1.5 lb. of pellets, and group 4—9 lb. of hay and 3 lb. of pellets per day. Body weights were taken monthly, milk weights daily, butterfat percentage of milk twice monthly and feed intake values daily. At the present time, we have completed two years' work on objective 1. The length of these trials was 90 days for the first year (1957-58) and 120 days for the second year (1958-59). Results of these trials are shown in Table 2.

The average initial milk production values are relatively close with a range of only 1 lb. per day. The three supplemented groups produced slightly more milk and 4% fat corrected milk than did the control group. Only slight differences were noted among the three supplemented groups in persistency of milk production, however all groups were somewhat higher in this respect than the unsupplemented group.

The average change in body weight for the two years' work (eight cows per group) shows a definite trend for increased body weight as the level of pellets in the ration increased. These changes in body weight were group 1, —21 lb.; group 2, —18 lb.; group 3, +2 lb. and group 4, +26 lb.

The average grain consumption is relatively close with the range of only .2 lb. per day. The amount of hay consumed follows its expected trend by decreasing as the amount of pellets in the ration increases. The three supplemented groups, however, consumed on the average slightly more silage than the unsupplemented group with only slight differences existing in the amount of total roughage dry matter consumed.

Results of these studies to date look rather encouraging for the use of dehydrated alfalfa pellets as a supplement to a low quality roughage ration such as that used in these trials. The most significant result to date is that of increased persistency with a corresponding increase in body weight. It should be kept in mind, however, that these results are still somewhat preliminary and should be treated as such. At the present time, additional work is underway at the Kellogg Station to further substantiate these results.

TO ERECT FEED MILL

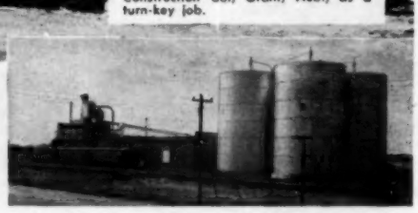
HERKIMER, KANSAS—The Herkimer Business Assn. will erect a feed mill here with a production capacity of 3,000 tons a month. Construction is expected to start this month.

MASTER-CRAFTED BY COLUMBIAN SINCE 1893

Puts a big PLUS in ALFALFA STORAGE

The new AAA Alfalfa Milling Co. dehydrated alfalfa storage plant at Plainview, Texas. Ten 1,000 ton Columbian Bolted Steel Tanks were used. The plant was built by Jones Construction Co., Grant, Neb., as a turn-key job.

COLUMBIAN LOOK-AHEAD ENGINEERING can add extra value to any Alfalfa Storage installation. For the AAA Alfalfa Milling Co., at Plainview, Texas, for instance, the ten 1,000 ton inert gas-tight Columbian Bolted Steel Storage tanks were equipped with ventilators — sealed tight for alfalfa storage, but making the tanks available for grain storage at some future time. The cost of this ventilation installation, at the time the tanks were erected, was small compared to the extra value it added.



Alfalfa Pellet and Bulk Feed plant of Alfa-Meal Co., Columbus, Nebraska, with four Columbian 32' x 48' Bolted Steel Tanks around a Columbian Bulk Feed bin, was erected by Clouse Construction and Erection Co., Benkelman, Nebr., in collaboration with Columbian engineers. This plant features loading and unloading of the tanks by an air system.

ENGINEERING AND DESIGN such as this — plus the extra tightness of Columbian tanks—is the reason why Columbian has been recognized as the leader in dehydrated alfalfa storage facilities ever since the inert gas method of storing was developed. Columbian built the first bolted steel tank for inert gas alfalfa storage and since has built many more installations. Columbian knows the problems of large and small operators. Whether you're planning expansion, a new mill or a storage installation, start your planning with Columbian. There's a reliable Columbian-experienced contractor in your area. Columbian can put you in touch with him.

WRITE TODAY for the FREE illustrated book "Bolted Steel Elevator Tanks"— it shows you why Columbian Tanks are best for any grain, feed or seed storage as well as for dehydrated alfalfa storage.

VISIT OUR EXHIBIT AT THE AMERICAN DEHYDRATORS CONVENTION
Feb. 2 - 5
Broadmoor Hotel, Colorado Springs

Columbian designed these two 500 ton tanks with unloaders for Northern Colorado Alfalfa Milling Co., LaSalle, Colorado. Columbian also supplied foundation plans, contracted a tank erector and located an inert gas supplier to install and service the equipment... and followed through to make sure every step was right.

COLUMBIAN STEEL TANK CO.
P.O. BOX 4048-R KANSAS CITY, MO.
Member, American Dehydrators Association; Associate member, Grain and Feed Dealers National Association

STEEL — Master-Crafted by Columbian . . . First for Lasting Strength

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FREE COLOR BROCHURE

Mixing ☐ Separating ☐
Grinding ☐ Materials Handling ☐

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The trolley stopped at the corner and was about to move on.

"All aboard!" yelled the conductor.

"Wait until I get my clothes on!" screamed a woman. After she put the laundry basket inside the door, the trolley went on.

◆ ◆ ◆

Judge: "Your wife maintains that life with you has been unbearable. What have you to say?"

Defendant: "It was the other way around, your Honor. She insisted on letting her two dogs and a cat sleep in our bedroom, and I couldn't stand the odor."

"Couldn't you open a window?"

"What! and let my pigeons out?"

◆ ◆ ◆

"I wouldn't worry too much if your son makes mud pies," said the psychiatrist, "nor even if he tries to eat them. That's quite normal."

"Well, I don't think it is," replied the mother, "and neither does his wife."

◆ ◆ ◆

The Irishman was relating his adventures in the jungle.

"Ammunition, food and whiskey had run out," he said, "and we were parched with thirst."

"But wasn't there any water?"

"Sure, but it was no time to think of cleanliness."

◆ ◆ ◆

"I'm anxious to make this shot. That's my mother-in-law up on the clubhouse porch."

"Don't be a fool, you can't hit her at 200 yards."

◆ ◆ ◆

Wife to husband after several rounds of drinks at a cocktail party: "Henry, don't take another drink. Your face is already getting blurred."

◆ ◆ ◆

An African king heard that a neighboring tribe was headed his way after his golden throne. His subjects hid the throne in the rafters of his hut, but that night it crashed through and killed the king as he slept.

Moral of this tale: People who live in grass houses shouldn't stow thrones.

YOU CAN TELL...

she's had her
CAFNECTAR
this morning

Cafnectar fortifies milk replacers and calf starter formulas with the sweet milk flavor calves love. Write for sample and information.

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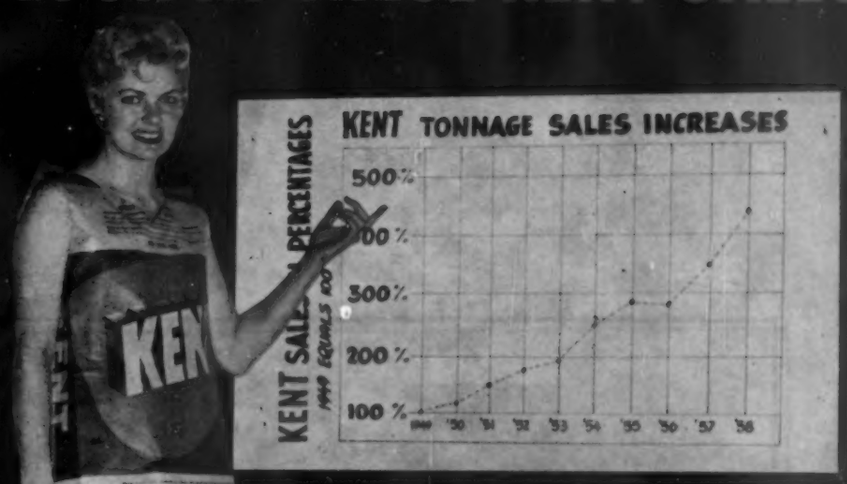
LOOK AT THESE KENT SALES!



Kent's "Dealer-Help" program keeps sales climbing— keeps dealer profits mounting

Dealer identification — Kent increases identification of dealers with the feed by tieing them in with sales promotion events. Dealers shown here are appearing on a Kent television show.

Dealer education — Kent keeps its dealers up to date on the latest trends in feeding. Shown here are Kent dealers attending a recent bulk feed handling clinic.

Fairs and shows — Kent dealers have the Nation's Number One country band, Leo Greco and his Pioneers, available for dealer dances, goodwill events and sales promotion activities. This scene is from the Farm Progress Show.

As a Kent dealer you can take advantage of these, and many other sales-boosting ideas that bring customers in — that help sell for you. If you want to make more money from your feed business, write Kent Feeds today. Get the complete story on the fastest growing feed in the Middle West.

KENT FEEDS
"THE FEED WITHOUT A FILLER"
Muscatine, Iowa Sioux City, Iowa

HOW WE'RE EXPANDING YOUR MARKETS FOR CATTLE FEEDS

CYANAMID PUTS A NEW DIMENSION IN THE CUBE

Range cubes have always been superior to "cake." Now, with Aureomycin added, they're "just what the rancher ordered"

Protein isn't enough. Wintering supplements must supply more. Cattle under average range-feeding conditions simply *can't find* enough vitamin A and minerals.

One more ingredient needed

But even protein, vitamin A and minerals aren't enough. One other ingredient should be in the range cube. That's a medication that allows cattle to make full use of the nutrients in range cubes and range forage. *The wide-spectrum antibiotic, AUREOMYCIN, does this by combatting the harmful bacteria that cause cattle to use up feed energy. With AUREOMYCIN added, range cubes are really fortified.*

What fortified range cubes do

Range cubes fortified with AUREOMYCIN and the other health-promoting ingredients have proved strikingly successful in bringing cattle through the winter strong and vigorous. Fortified cubes help cows maintain good condition right up to and through calving, so that calving is easier and chances are increased for more *live* calves.

Fortified range cubes offer other advantages. Replacement heifers, fed range cubes, develop sounder bodies and tend to mature earlier. Over-wintering range calves get the double benefit of health protection and steady growth, producing an average daily gain up to 1 lb. per head.

Specific disease prevented

In addition to promoting growth and vigor, AUREOMYCIN in range cubes helps prevent respiratory infections, bacterial diarrhea and foot rot. It also guards against invisible, subclinical diseases that slow down growth. Cattlemen, bringing cattle off range in springtime, say they can *see* the difference — cows and calves are healthy, sturdy, *look* good.

AUREOMYCIN as a health and growth booster has shown equally good results when used in creep feeds for young calves and in feed lot rations. Talk to your feed manufacturer or feed dealer. Find out how AUREOMYCIN can best serve you. American Cyanamid Company, Agricultural Division, New York 20, New York. **AUREOMYCIN is American Cyanamid Company's trademark for chlortetracycline.*

Range cubes supply plenty of protein with minimum bulk — plus minerals, vitamin A and disease-fighting AUREOMYCIN. Cubes are easily fed by man and truck.

AUREOMYCIN in range cubes pays off even in summer. Here, the Buck & Doe Run Valley Farm in Pennsylvania uses cubes to fatten out its Santa Gertrudis cattle.

CYANAMID

AUREOMYCIN
IN FORMULA FEEDS

CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

Sales of creep feeds and fortified range cubes keep showing healthy growth!

Over the past few years, Cyanamid has strongly promoted *both* types of feeds and will do so again this year.

Advertisements like the two below—which appear in leading farm publications—do more than tell customers about AUREOMYCIN. They *encourage the practice* of feeding creep feeds and range cubes, *sell* the values of the feeds themselves, help expand your markets for cattle feeds. American Cyanamid Company, Agricultural Division, New York 20, New York.

HE PUT NEW LIFE IN CREEP FEEDING

Creep feeding always paid. Now, with Aureomycin, ranchers like C. D. Vigle make creeps pay even more...

C. D. Vigle runs 200 Angus at Hamilton, Kansas. One of the first around Hamilton to use creeps, he proved they produce thriftier calves faster. Then, on the advice of his feed dealer, he added AUREOMYCIN® to the creep ration to pull some calves through a bad case of scours.

Feeds Aureomycin till market

Pleased with its performance, Mr. Vigle kept his calves on AUREOMYCIN that year, now starts them on creep feed with AUREOMYCIN and bunk feeds it right through till market. He summed up the reasons for his program this way: "I started on AUREOMYCIN in creep feeds to clean up sicknesses. I've stayed on it and fed it through to market for two more reasons: the calves *do* better, gain weight faster and, I just haven't *had* any disease problems since I started on AUREOMYCIN."

Protects against stress

Mr. Vigle's experience is based on many field tests of AUREOMYCIN in creep feeds. They have produced as much as 25% more daily gain, 44 more pounds per head, over feeds without it. AUREOMYCIN also helps calves through stress periods like weaning and protects them against scours and respiratory diseases. The result: bigger, better looking calves and yearlings better able to make low cost gains. Ask your feed manufacturer or dealer about AUREOMYCIN. American Cyanamid Company, Agricultural Division, N. Y. 20, N. Y.

®AUREOMYCIN is American Cyanamid Company's trademark for chlortetracycline.

"I'm feeding 80 calves with this creep. They'll eat about 5 lbs. a day now. The ration is formulated to give them 70 milligrams of AUREOMYCIN. I'll bet I won't get a single case of scours from now till market and I figure they'll gain 55 to 65 lbs. a month."

"This bunch of calves averages 750 lbs. They were creeped with AUREOMYCIN and they're still on it. The complete ration is grain, cotton seed, molasses and yeast. These Angus do a good job of turning it into beef."

	Creep feed Without AUREOMYCIN	Creep feed With AUREOMYCIN*
Number of calves	50	97
Days creep fed	112	113
Average initial weight (lb.)	218.8	251.0
Average finishing weight (lb.)	382.0	476.3
Average daily gain (lb.)	1.46	1.90
Increase in gain (%)		27.4
Creep feed per lb. gain (lb.)	2.34	1.72
Improvement in creep feed efficiency (%)		26.5

*Creep Feed contained sufficient AUREOMYCIN to provide 70 milligrams per head per day.

This Colorado experiment compares creep feeds with and without AUREOMYCIN. Note % increase in gain and feed efficiency with AUREOMYCIN.

"I can't control the weather but I can prevent foot rot with AUREOMYCIN. It's been muddy like this for weeks."

CYANAMID

AUREOMYCIN
IN FORMULA FEEDS

CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

At your service . . .

Bob Harrison now represents Feedstuffs and Feedlot in the Central and Southeastern states. Experience with national poultry publications and with an advertising agency gives him a solid background in the formula feed market.

If you're interested in how to sell more to the feed market, call Harrison at Harrison 7-0515, or write to him at 2832 Board of Trade Bldg., Chicago 4.

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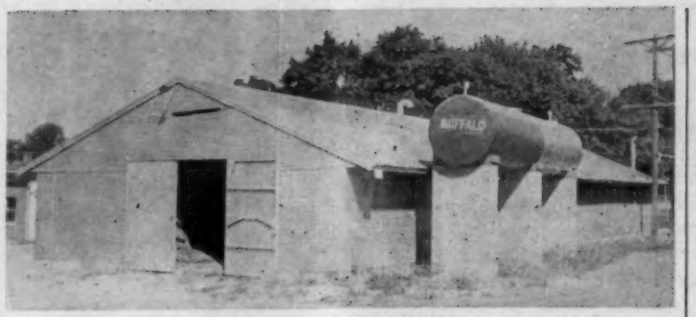

CONVERTED—This is the aluminum building that Hoke Bair Co., Hanover, Pa., converted from a layer house to a feed mill when the old mill burned.

Pennsylvania Feed Dealer Has 5,200 Cage Layer Operation

By Al P. Nelson
Feedstuffs Special Writer

When Hoke Bair Co., Hanover Pa., decided to start a cage layer project, Hoke Bair and his son, Don, wound up by erecting a 30 by 104 ft. aluminum building for the hens on the feed store premises. The building, put into operation in late 1957, housed 1,080 layers.

It was convenient to have a feed store and large laying flock adjacent because customers who came to the store and mill for feed were interested in seeing how the laying flock was getting along, and were able to witness the cage layer operations. Some of the farmers decided to start cage projects themselves and naturally bought equipment, chicks, feed and other needs from Hoke Bair Co.

The Bairs wholesaled most of their eggs to local restaurants, hotels and other similar buyers in the area. Customers liked the quality of the eggs they were able to get from this feed firm with the caged layer operation.

Fire Levels Mill

Then fire leveled the mill and warehouse of the firm in January, 1959, leaving only a separate office building standing, plus the aluminum building housing the layers. None of the layers was lost because of the smoke or the heat of the fire.

The layers were sold, and a complete feed mill was opened in the former cage layer house. The building was raised several feet and a concrete floor put in. Mr. Bair reports that the converted building is working out very well as a feed mill.

Also, now that Mr. Bair and his son had seen how successful a caged layer operation could be, they decided to set up another layer operation. Their records showed that for one year of lay, the previous flock had an average of 67½% production, that the birds made a dozen eggs on 4.45 lb. feed and that a cage netted $2.02.

In planning for the future, the Bairs bought a 10-acre tract of land about 4 miles from Hanover, and built a 5,200 cage layer house, complete with automatic feeding and watering, cooler room, candling facilities and 6-ton feed storage tank which augers feed automatically into the building.

The building is 30 by 248 ft. and has roof and window ventilation. It also has a concrete floor. The layer project and the marketing of eggs are under the supervision of Don Bair.

"The supplying of feed to 5,200 layers is practically a year around proposition," states Mr. Bair. "Along with the marketing of eggs, this gives us considerable revenue 12 months a year from this one operation."

Mill Machinery

In installing new mill machinery in the former cage layer building in Hanover, the Bairs used a Daffin packaged unit. "This stationary mill requires very little room," Hoke Bair points out. It is a one-man operation.

Wilme Mace, mill foreman, says the unit runs with two electric motors, one a 75 h.p. and the other a 2 h.p. The older mill setup had five electric motors of various sizes. The firm's electric power bill is half what it was before, reports Mr. Mace.

The mill is set up near the unloading door so that the farmer who empties his bagged corn into the feed table can also watch the mill foreman emptying bag supplement into the mixer a few feet away. Mr. Mace reports that many farmers like to see all the ingredients that go into the grinding and mixing of their feeds, and that several have commented on this feature of the new mill.

The firm charges 20¢ cwt. for grinding and mixing if the customer brings in his own grain and hauls back the mixed feed. The charge is 25¢ cwt. if the feed firm must handle this job. About 75% of the grind and mix customers bring in their own grain and haul it back, reports Mr. Mace.

Quite a few of the larger steer feeders have their own grinders and mixers and just buy supplement from Hoke Bair Co.

Harold Mummert is the firm's outside salesman. He visits customers regularly and talks over their feed problems with them. Ever since the firm went into the cage layer business on its own, Mr. Mummert has had an extra sales point. He invites

(Turn to OPERATION, page 34)

CAGE LAYER HOUSE—Shown here is the inside of the 5,200-cage layer house built by Hoke Bair Co. after the old feed mill was destroyed by fire.

DUMPS CONCENTRATE — Wilme Mace, mill foreman, dumps concentrate in full view of farmer who is emptying bags of cob corn onto the feed table (left).

EQUIPMENT—Hoke Bair (left) looks over the mill equipment he purchased when other equipment was lost in a mill fire. A Daffin packaged mill was installed in the former layer house.

THE PRICE IS RIGHT

Get a Ross Bucket Elevator! Ross gives you all-bolted, heavy gauge steel construction. Ventilated or closed legging. Box Type if desired. Hy-Speed cups. Rubber belting. Choice of drives. Galvanized if required. Dust-free operation. Made for inside or outside use. All sizes. 100 to 6000 bushels per hour. Send for literature.

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Gentlemen: Please send complete information on Ross Bucket Elevators.
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Give your feedstuff the alfalfa it so richly deserves!

MERRY-MIXER

DEHY ALFALFA GREENULES

Produced from the world's finest alfalfa crop

Any feedstuff worth marketing is worth Merry Mixer dehydrated alfalfa Greenules.

Before placing your next order, ask yourself these questions:

Why take extra steps to procure various nutritional elements important to your feed formula when you have so many of them in Merry Mixer alone?

Why buy just any dehydrated alfalfa when Merry Mixer offers you the best at no extra cost?

Insist on Merry Mixer . . . the name best known in the feed industry for quality, uniformity and service.

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CONSOLIDATED BLENDERS *INCORPORATED*

JOE BROOKS

BY AL P. NELSON

Get the Other Fellow's Viewpoint

It was the monthly sales training meeting of the Joe Brooks organization, which meant 13 employees—five from the Endeavor mill and eight from the Hansen's Creek mill.

And the most nervous employee was lanky Windy Kramer, the route man. Windy was scheduled as the speaker of the evening, and his topic was "How I Handle Customers." Windy was freshly shaved, wore a snappy sport coat and grey flannel trousers.

"Man, ain't he dressed up?" teased Milt, as the men came in from the Hotel Manitou dinner and settled into chairs in the salesroom of the feed mill. "I'd better watch out or this guy will grab all my red headed sweethearts."

"G'wan," blushed Windy. "I'm married, you know. And you guys just wait—you'll be givin' talks, too, and then I'll needle you. I don't know why Joe picked me first on this speaker deal."

"I picked you because you handle more customers on the routes than any of the rest of us do here at the mill," Joe said. "And after so many months of sales training meetings, I want to see what you fellows really think about handling customers. I want to learn something."

Windy's face got a little redder through the winter sun tan, and he cleared his throat. He had quite a few 3 by 4 in. filing cards in his hand.

"Gee," said Milt, "he's got his speech all typed out just like a preacher. Man!"

Joe held up his hand. "Quiet, fellows," he said. "Give Windy a chance."

Windy's Turn

Windy's lips tightened a little. "Remember, I can needle, too, when your turn comes," he promised. "Like for like."

"Is that the way you treat your customers?" Milt asked.

Windy had cooled off somewhat by this time. He grinned, and began to speak. "When I take out my route truck and go out to visit farmers," he said slowly, "I try to sell the farmer some merchandise we have in stock or some service we have to offer. I don't go to see him just to find out how many good looking, red headed daughters he has."

A loud roar of laughter greeted this sally, but Milt Peters took it good naturedly. Pop Henley, who hated Milt's constant mention of women in the conversations about the mill, almost fell off his chair, he was slapping his knee so hard.

"I get the reference!" Milt said grandiosely. "I shall remember it."

Windy cleared his throat. "When I leave this mill every morning," he said, "I know my job is to sell merchandise and service and bring home lots of orders. But I don't let this upset my stomach or make me worry. It used to, but it don't anymore."

"Why?" asked Smiley Johnson.

Windy smiled engagingly. "Well, it took me about a year to learn that my most important job was not to sell."

The rest of the employees turned inquiringly toward Joe, who sat with legs crossed. What kind of "business sacrilege" was this Windy talking about? Hadn't Joe been telling them month after month to sell, sell, sell?

Joe, himself, had a few uneasy moments. Was Windy a radical? Was he using this opportunity to lambast business? He didn't think so. Windy was too level headed for that.

"What Farmer Needs"

"Today I'm more convinced than ever," Windy went on slowly "that my most important job isn't to sell." Then he leaned forward, his eyes shining. "I learned that my most important job is first to find out what the farmer really needs. After I know what that is, then I can try to sell him something."

"Holy cow!" exclaimed Butterball.

You can sell best

...and customer satisfaction "comes in Burlap!"

Have you ever added up the inducements you can offer when you sell sacked feed in burlap? They can help you in selling. Here they are:

1. *A discount* on every ton of feed, when the mill provides a return-bag program.
2. *Simplified inventory* for the customer.
3. *Identification* for medicated feeds.
4. *Non-separation* of formula-ingredients.
5. *Your prices* are competitive with returnable burlap bags.
6. *Service*...you can give small customers as good delivery service as large customers (and on the same route).
7. *Bulk customers* can be served with bag-to-bulk trucks.
8. *Quantities* can be bought *as needed.*
9. Feed in burlap bags is *sanitary and free from contamination.*
10. *Accurate weights* are assured in a burlap bag.
11. *Fifty-pound* as well as 100-lb. bags can be offered.
12. Farmers have many uses for empty bags...only burlap serves them so well!

Quite a few selling-points, don't you agree? Next time you're selling a new customer, remember there's a lot to be said for burlap bags!

Just ask your own customers—they'll tell you that burlap

Is strong — takes dragging, dropping, *man-handling* — any tough job on the farm.

Laughs at sudden showers — wetness or dampness can't weaken it.

Saves money — extra value from re-sale and re-use.

Gives good ventilation — keeps farm supplies and products fresh.

Saves storage space — stacks to any height without slipping.

Has 1000 uses — always in demand on the farm (popular with farm wives, too!)

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"PRODUCTS OF PROGRESS"

"He's a better public speaker than the minister in our church."

Everyone laughed at that, and Windy got a little red faced.

"I try," he said, "to get acquainted with the farmer. I try to make him feel that I'm his friend and hope to be a sort of business partner of his, helping him to make more profit without demanding any part of that profit. I tell him I'm gonna come around regularly, to help him with his feeding problems if he needs help and just be ready to tell him about any new feed or farm products that come up. There's one thing I found out. Farmers don't want to be high pressured, but they do like regular visitors that don't stay too long, but who can give practical advice."

All the employees were listening closely now.

"I've learned, too," Windy said, "that farmers don't want you to visit them when you are down in the mouth, feeling tough or are just plain poor company. Farmers act different on different days. One time you call a farmer may be in high spirits. Then he don't need cheerin' up. But some day when you call he'll be down in the mouth about one thing or the other. That's when he wants you to cheer him up even if he don't say so. And so I try to keep up on all the things about agriculture that are encouraging, so I'll have 'em in mind when I need to tell about 'em. Get a man in a more cheerful frame of mind and he'll feel more like buying something."

"Gee, you don't have much chance for selling if you take so much time making friends with farmers and cheering them up, do you?" asked Butterball.

Windy chuckled. "Shucks, selling doesn't always take a lot of time. Get a man cheered up and in a good frame of mind, and in two minutes maybe you can talk him into a new feeding program using our feeds. It takes less than a minute to tell a man about a new feed or farm product, and if you see a gleam of interest in his eyes, you know you can talk another minute or two about it."

The tall routeman went on talking about the various types of customers on his route. Gradually some important facts emerged. First, the customers had to like the routeman, before they gave him orders. Secondly, they had to trust him, to feel that he was dependable and that he was genuinely interested in them and their feed and farm problems.

When Windy had finished, there was a loud round of applause and some of the employees asked questions of Windy for 10 minutes or more. Joe was very pleased. A big smile on his face, he got up and looked at his men.

"Fellows, Windy has started us all off right in this series. I learned a great deal from the talk, and I know you did, too. Next month, Milt Peters will tell us how he handles customers. By the time we are through with this series, I know we'll win and hold more customers through this exchange of information."

EGG PROMOTION—Little Vicki Anderson is a pert reminder that National Egg Month will be observed in March. The promotion is sponsored by the Poultry & Egg National Board. According to Carroll Eiler, chairman of National Egg Month and PENB board member, state National Egg Month chairmen will be responsible for statewide and local promotional activities. Also cooperating in the promotion are the U.S. Department of Agriculture, state extension personnel and other agricultural food and business groups.

Minnesota Elevator Convention Feb. 15-17

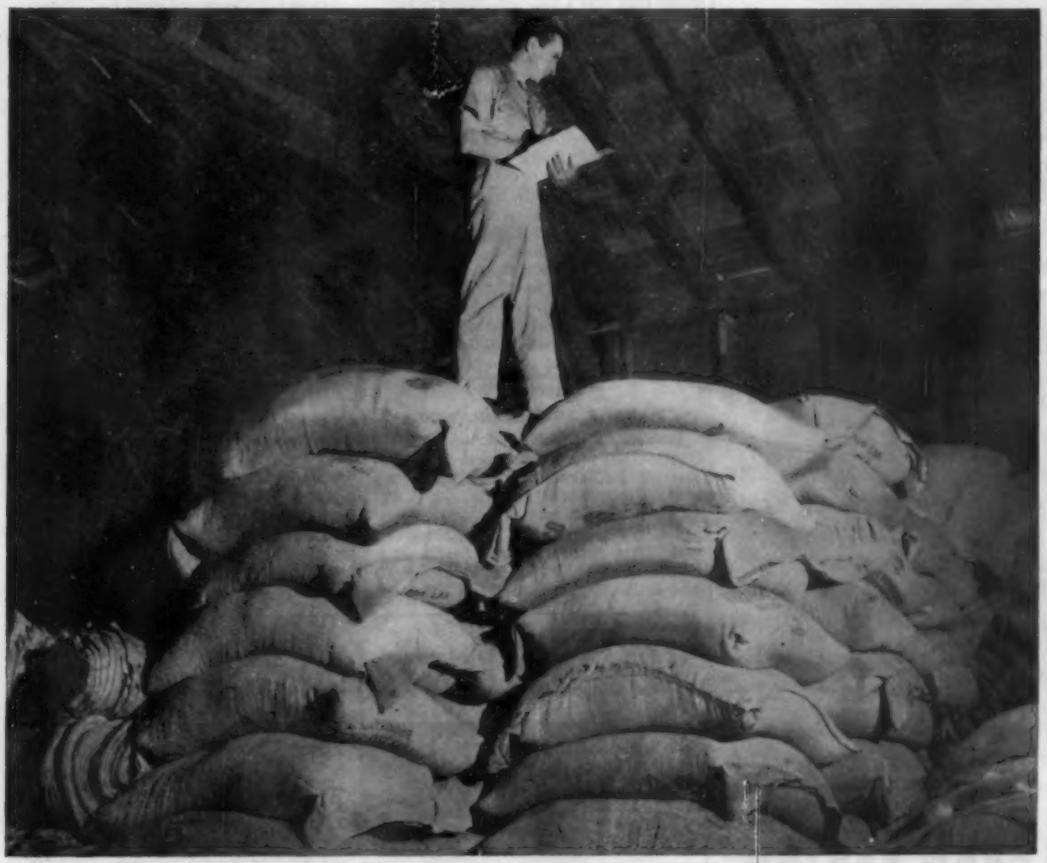
MINNEAPOLIS — Tentative program plans have been announced for the Farmers Elevator Association of Minnesota convention at the Pick-Nicollet Hotel, Minneapolis, Feb. 15-17.

Topics to be discussed Feb. 15 include how to use aeration, grain banks, control methods for accounts receivable and what the St. Lawrence waterways mean to the grain trade.

An officers and directors breakfast and a managers breakfast will be held Feb. 16. A discussion of the new Commodity Credit Corp. contract is scheduled for the afternoon, plus "How to Have a Heart Attack," by Dr. Bates, Lansing, Mich. A dance will be held in the evening, courtesy of the Minneapolis Grain Commission Merchants Assn.

A business session is scheduled Feb. 17.

what serves best!



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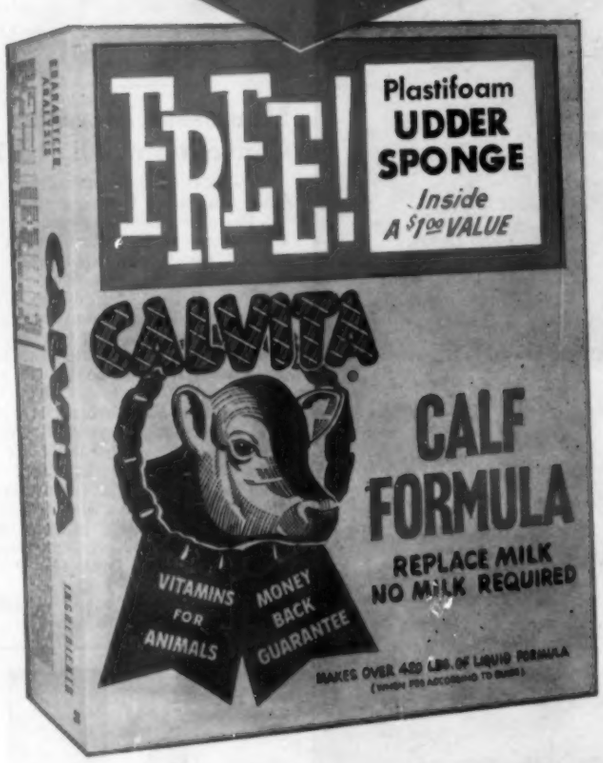

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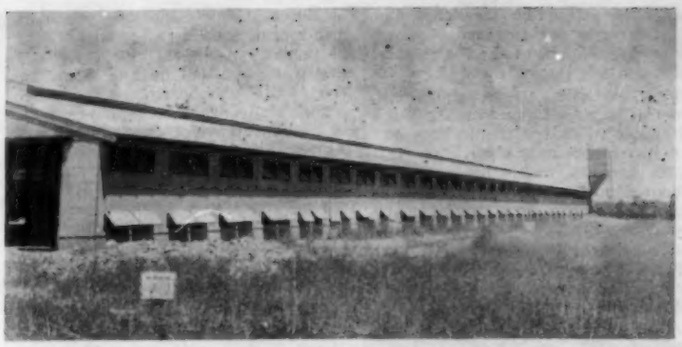

LAYER HOUSE—This is exterior of the new 30 by 248 ft. layer house owned by Hoke Bair and his son Don. The house is about 4 miles from Hanover, Pa. Most of the egg production is sold to hotels, restaurants, etc., in the area.

OPERATION

(Continued from page 30)

farmers to visit the cage layer house, inspect it and examine the records. Farmers do this and it has resulted in many of them taking on cage layer projects and buying feed from the company for cage projects and regular flocks.

"There is no doubt but what our cage layer project is a sales asset when it comes to talking feed with a farmer," states Mr. Mummert. "We've got actual results we can quote him and I can tell farmers just what management policies we followed in getting those results. In my feed sales work, I find that the farmer wants to be helped with his feeding problems, but he wants facts, not generalities."

Thus, with a large cage layer operation of its own, plus a new, compact and efficient mill, backed up by aggressive outside selling and service, Hoke Bair Co. is providing itself with a year around business-building program. By producing a grade A egg in a local market that wants premium eggs, the feed firm officials are pointing the way to local farmers concerning the profits that can come from giving the public the kind of egg it demands in today's market.

PARLOR INCORPORATED

PAYETTE, IDAHO—Articles of incorporation have been filed for Pig Parlor, Inc., here to breed, raise, import, export and deal in pigs, all types of swine and livestock of all kinds, listing $25,000 capitalization and these incorporators: David and Geraldine N. Davies and Raymond and Edith Rynearson, all of Payette.

Colorado State Schedules Livestock Days for Feb. 22-25

FORT COLLINS, COLO.—Livestock Days, an annual event designed to bring members of the state's livestock industry up to date on research and developments, will be held at Colorado State University Feb. 22-25, it was announced by Paul S. Pattengale, CSU extension animal husbandman and general chairman of the event.

Again this year, Livestock Days will incorporate a short course for dairymen, a sheep and wool school plus separate one-day sessions for swine growers, beef cattle producers and cattle feeders.

The dairy fieldmen's short course will kick off the four-day sessions Monday, Feb. 22, and will continue through Tuesday. The sheep and wool school is scheduled to begin Tuesday and will run through Wednesday.

Wednesday will be Swine Day and Beef Cattle Producers Day, with separate sessions for these producers to acquaint them with the latest information on diseases, management, improvement and consumer demands. Windup of Livestock Days will come Thursday, Feb. 25, with Feeders' Day—a program specifically for lamb and cattle feeders.

Speakers on the four-day program will include researchers with the Colorado Agricultural Experiment Station, CSU extension service specialists, fieldmen for commercial firms, livestock association officials, veterinarians, dairymen, livestock producers and feeders and professors from Utah, Kansas and Michigan agricultural colleges.

Why W-W is the Best

HAMMERMILL BUY

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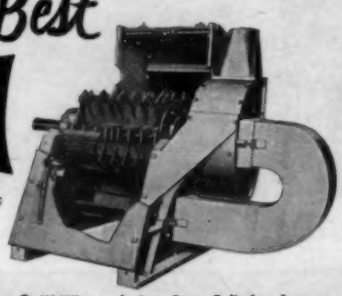

1. No pre-crushing of ear corn is required.
2. W-W has many quality features as well as a grey cast iron frame that resists corrosion and won't rust; gives exceptionally long life. Hammers are hard-surfaced with Tungsten Carbide.
3. W-W's exclusive Star Cylinder has a unique design that requires much less power than competitive makes.
4. W-W has been producing quality mills for over 50 years. Original mills are still in use.
5. Prices are lower than most makes with inferior quality. Here are representative prices:*

Model	HP	Feed Opening	Price *
F-25M Gooseneck	40	18"	$ 697.04
F-27M Gooseneck	75	24"	$1665.86
F-29M Gooseneck	100-150	36"	$2183.98

Other Models from $154.00 to $408.16. * All prices f.o.b. factory. You get the best hammermill available. Write for catalog and ask about convenient time-payment plan.

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TODAY'S MOST STABLE FORM OF VITAMIN A WITH 100% BIOLOGICAL ACTIVITY...

The need: Except for newly-harvested crops, grains are notably deficient in vitamin A. Yellow corn, especially, loses much of its carotene in storage. Result: where animals feed on these grains, there is the likelihood that vitamin A deficiency can become a problem. In beef cattle, for example, vitamin A-deficient rations may result in night blindness, diarrhea and the birth of weak, blind or dead calves. In dairy cattle, poultry and swine, A-avitaminoses may produce equally serious and economic setbacks.

The product: To assure a properly balanced ration you *must* include vitamin A in your formulations. Yet what you want in a vitamin A supplement is high stability, 100% biological activity, *and* economy. Such a supplement is STABIMIX A.

The advantages: STABIMIX A is one of the finest, most dependable sources of vitamin A yet made available to the feed industry. A free-flowing, hard beadlet prepared from stabilized, synthetic vitamin A in a gelatin-type base, STABIMIX A is two to eight times as stable as fish oils under any condition you can name—heat, humidity, cold, pelleting, water dispersion, contact with minerals and antibiotic-vitamin mixtures. No longer need you worry about costly overages to offset deterioration. Unlike other sources of vitamin A, *the number of STABIMIX A units you mix with your feed stays with your feed longer!* It flows freely at all times, distributes evenly, and will not arch in hoppers of mechanical or vibrator feeders. Best of all, it saves you money in the bargain.

The convenience: STABIMIX A is packaged in easily-handled 50 and 100-lb. fiber drums. Various potencies are available to meet your every formulation need—including 10,000, 20,000, 30,000, 250,000 and 325,000 U.S.P. units per gram. Why not investigate for yourself the *stability, biological activity* and *profitability* of STABIMIX A in your feeds? Your Merck Sales Representative will be happy to discuss your needs. If you prefer, call or write Merck Chemical Division, Merck & Co., Inc., Rahway, New Jersey.

STABIMIX A

with **THE MERCK MARGIN OF SURETY**

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Two big benefits are always yours with Alden—*prompt service* and *top quality* limestone.

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Order Alden now in 50 and 100-lb. bags or in bulk. Coarse or regular grinds.

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ALDEN, Standard of Quality and Service for Over 35 years

NEW BULK STATION—Master Feed & Seed Co., Inc., distributor for McMillen Feed Mills, has opened this new bulk feed station at Madison, Wis. Ralph W. (Pat) Lay, manager, says the station enables the Madison firm to service feed dealers within a 90-100 mile radius around Madison with concentrates and complete feeds in bulk. As many as 12 different feeds are available at a time for pickup by dealers and delivery by company trucks. The bulk feed is unloaded by rail hopper cars and conveyed to the elevator leg via a self-cleaning drag conveyor. It is distributed from the elevator head to the bins via gravity and loaded into truck through a weigh-lorry scale.

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FISH SOLUBLES
WITH MINIMUM 25% FISH GLANDULAR AND LIVER HYDROLYSATE ADDED
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Molasses Exports and Imports Drop Sharply

WASHINGTON—Both imports and exports of industrial and feed molasses experienced a sharp drop from September to November, 1959, according to the U.S. Department of Agriculture.

Imports totaled 12.2 million gallons during October and 15.4 million during November, 1959, substantially lower than the 23 million gallons imported in September. This brings imports of molasses from Jan. 1-Nov. 30, 1959, to 261 million gallons, compared with 309 million during the same period of 1958.

Sources of imports during October and November, 1959, in million gallons, were Cuba 8.9, Mexico 5.9, France 2.6, Dominican Republic 2.4, Spain 1.6, Haiti 1.5 and the remainder from other countries.

Exports from the U.S. and its territories amounted to 5.6 million gallons in October and 1.5 million gallons in November, 1959, compared with 4 million in September. This brings total exports from Jan. 1 through Nov. 30, 1959, to 24.3 million gallons, compared with 13.8 million during the same period in 1958.

Of the cumulative exports, 7.8 million gallons were from Hawaii, 14.4 million from Puerto Rico and 2.1 million from the mainland.

New Feedmobile

NYSSA, ORE.—For the first time feeders in this area were able to get complete on-the-farm feed processing service when Bill Moad put his new Daffin feedmobile on a regular route schedule recently. He drove it from the factory in Lancaster, Pa., where he took delivery of the unit.

Mr. Moad's feedmobile is said to be the first unit of its type to be put into operation in a Pacific coast state.

To serve formula feed mixers...

Kansas Soya produces a quality product from the CREAM of the soybean crop...

...then schedules shipments for dependable on-TIME delivery, from our mill to yours.

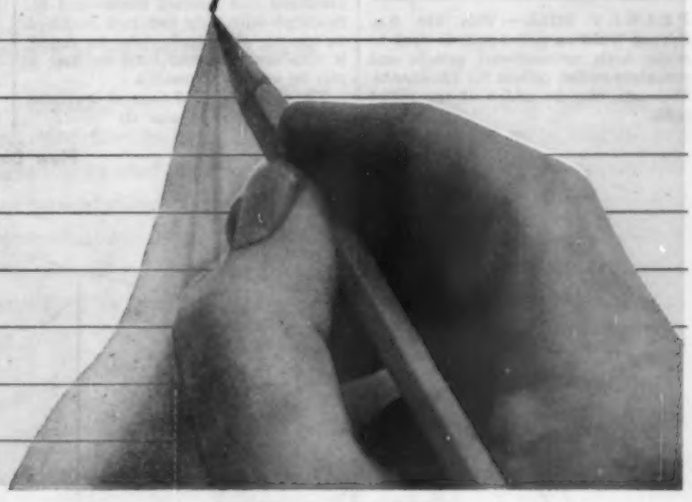
Kansas Soya Products Co., Inc.
Phone Dickens 2-7270 Emporia, Kansas

FORMULA WORK SHEET

MASH INGREDIENTS	Lbs.	Prod. Energy Cal./lb.	Protein %	Fat %	Fiber %	Calcium %	Total Phos. %	Methionine %	Ribo mg./l
Ground Yellow Corn									
Standard Wheat Middl									
Soybean Oil meal (44									
Fish meal									
Meat and Bone Scrap									
Di Calcium Phosphat									
DDS									
Vitamin A			41	2.0	1.00	0.015	0.125	0.1	0.3
						0.004	0.046	0.011	0.3
TOTALS									

Memo to: Purchasing Agent

I suggest Permadry "sealed-in" vitamin A for all our rations. Stability during storage and pelleting is outstanding, and it has excellent dispersibility and resistance to moisture. Also, data from commercial, college and private laboratories show that this Vitamin A product has superior biological activity



PERMADRY® is THE "sealed-in" vitamin A made by a patented process (U.S. Patent No. 2406634 and others pending). Its use assures outstanding stability and performance in all types of formula feeds. Permadry resists the destructive action of minerals and moisture which are so harmful to other types of vitamin A. Write for a sample and all the facts about Permadry. So good no one else can match it.

Literature supplied on request

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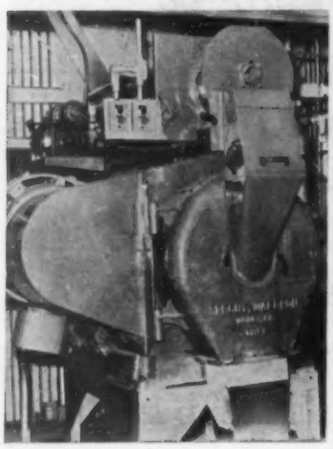
New Iowa Mill, Operated by 2 Men, Can Make All Types of Feed, Including Ruminant Pellets

By FRED E. TUNKS
Feedstuffs Staff

The trend in feed mill operations in many sections is toward small plants, serving nearby areas, which are flexible enough to make just about any type of feed and yet economical and efficient in construction and operation.

An example of this type of plant is the new mill of Staley Farm Supply at Rowan, Iowa. It is an all-bulk, two-man mill operation with a mixing capacity of 20-24 tons per hour and a pelleting capacity of 8-12 tons per hour, depending on the type of feed.

The mill can turn out all types of livestock and poultry feeds, including complete-ration pellets (containing hay) for ruminants.



PELLET MILL—This 100 h.p. Sprout-Waldron pellet mill is used to make both conventional pellets and complete-ration pellets for ruminants. Molasses may be added at the pellet mill.

Owner of the mill is Glen Staley, who also has a seed cleaning business at nearby Hampton, Iowa, and a grain business at Rowan. The new feed mill was built near existing grain storage and office facilities, and uses the truck scale and office there. Capacity of Mr. Staley's grain storage space at Hampton and Rowan is 1 million bushels.

To Feed 12,000 Lambs a Year

Mr. Staley, a lamb feeder for 20 years, is presently feeding pellets produced in the Rowan mill to about 4,500 lambs of his own. He has plans for feeding out 12,000 lambs a year in three batches and for the establishment of a commercial cattle feedlot and a hog feeding setup.

The plant is located in a north central Iowa farming area which includes grain producing and extensive livestock and poultry operations. Serving an area within a radius of approximately 25 miles, the mill offers custom milling as well as the production of registered feeds.

The mill was designed by the Archer-Daniels-Midland Co. equipment department, which has its headquarters in Kansas City and its production facilities at Neodesha, Kansas. This firm also provided some of the equipment.

Concentrates and premixes are purchased and received in bulk and are combined in the mill with local grains and other ingredients.

Mr. Staley points out that the mill combines flexibility—permitting a good many variations in handling ingredients and finished feeds—and efficiency—with only two men required to operate the plant. Also, he noted, it was designed and built so that it can be readily expanded.

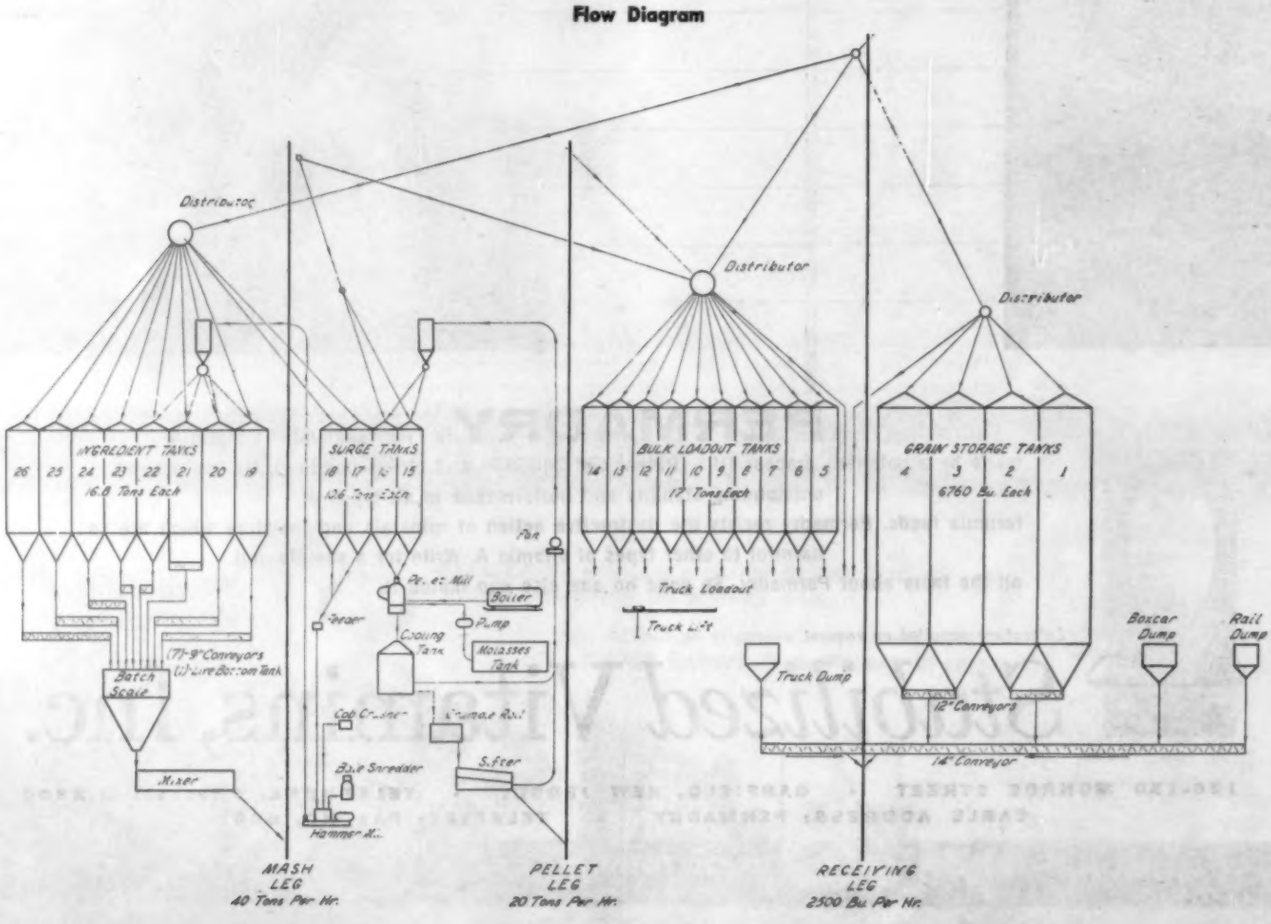
The plant has 346 tons of overhead

(Turn to page 42)

NEW FEED PLANT—Exterior view of new bulk feed plant of Staley Farm Supply at Rowan, Iowa. Bulk ingredient bins (left) and bulk load-out bins (over driveway) form roof of mill building—and the structural steel bin supports enclosed with steel siding form the mill building walls. The mill floor is at dock height. On the right are the four welded steel grain tanks. Bulk feed is loaded out through the tanks over the driveway or a spout on the left.

LAMBS ON FEED—Glen Staley, Staley Farm Supply, Hampton and Rowan, Iowa, stands near one of three lots of his own lambs being fed pellets produced in new plant. He has 4,500 lambs on feed now and plans to feed out 12,000 a year. He also expects to establish beef cattle and hog feeding operations near Rowan.

Flow Diagram



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3. Pig Finisher Rations; Pig Finisher Concentrates

3 T-H POULTRY PREMIXES

1. Chick Starter Rations; Broiler Starter Rations
2. Chick Grower Rations; Poultry Laying Rations; Poultry Breeding Rations; Poultry Concentrates
3. Broiler Grower Rations

2 T-H TURKEY PREMIXES

1. Turkey Starter Rations; Turkey Grower Rations; Turkey Finisher Rations
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THOMPSON-HAYWARD ALSO MANUFACTURES A COMPLETE LINE OF T-H MIXES FOR EVERY GROWING STAGE OF CATTLE, SHEEP, DOGS AND MINK.

CATTLE SHEEP DOGS MINK

A Combination Feed and Premix Program That Allows Customized Feed Formulation Without Over-Fortification or Duplication of Additives

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Now you can buy all your premixes from one source—in any amounts and in any combination of premixes! Offering a complete line of packaged premixes for every growing stage, the new T-H Premix Program eliminates piecemeal ordering, waste and unbalanced inventories.

The T-H MIXES used in this new premix program contain only the additives that sensibly belong in a premix—there is no costly, unnecessary duplication or over-fortification. Each additive has been carefully selected by our nutritional staff after a complete review of all available research. In addition, each additive has been subjected to thorough testing in our quality control laboratory.

NEW T-H FEED PROGRAM

Realizing there is no one standardized feed program just right for every feed manufacturer, Thompson-Hayward has set up a flexible feed program to be used in conjunction with T-H MIXES. This feed program outlines several different combinations of ingredients from which you may choose when mixing your feeds with T-H MIXES. There is no guesswork or waste involved in mixing. You just select the one combination of ingredients that is right for your particular needs, and your work is done.

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For more detailed information about the T-H Premix and Feed Program for poultry, swine and turkey, send for this free booklet today. In addition to a list of additives used in each T-H MIX, this booklet gives a complete breakdown of the type and amount of each ingredient used in the suggested T-H Feeding Programs. Discover for yourself how the new T-H Premix and Feed Program can increase feed sales and profit for you—fill out this coupon and mail it to Thompson-Hayward Chemical Company, 2915 Southwest Blvd., Kansas City 8, Missouri.

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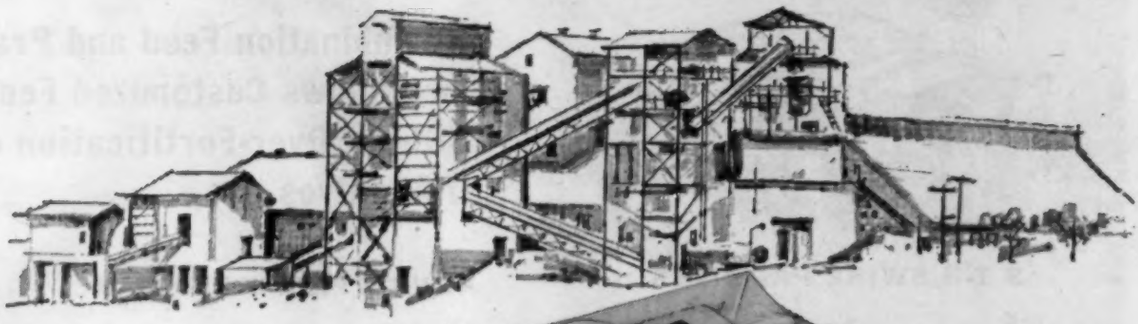
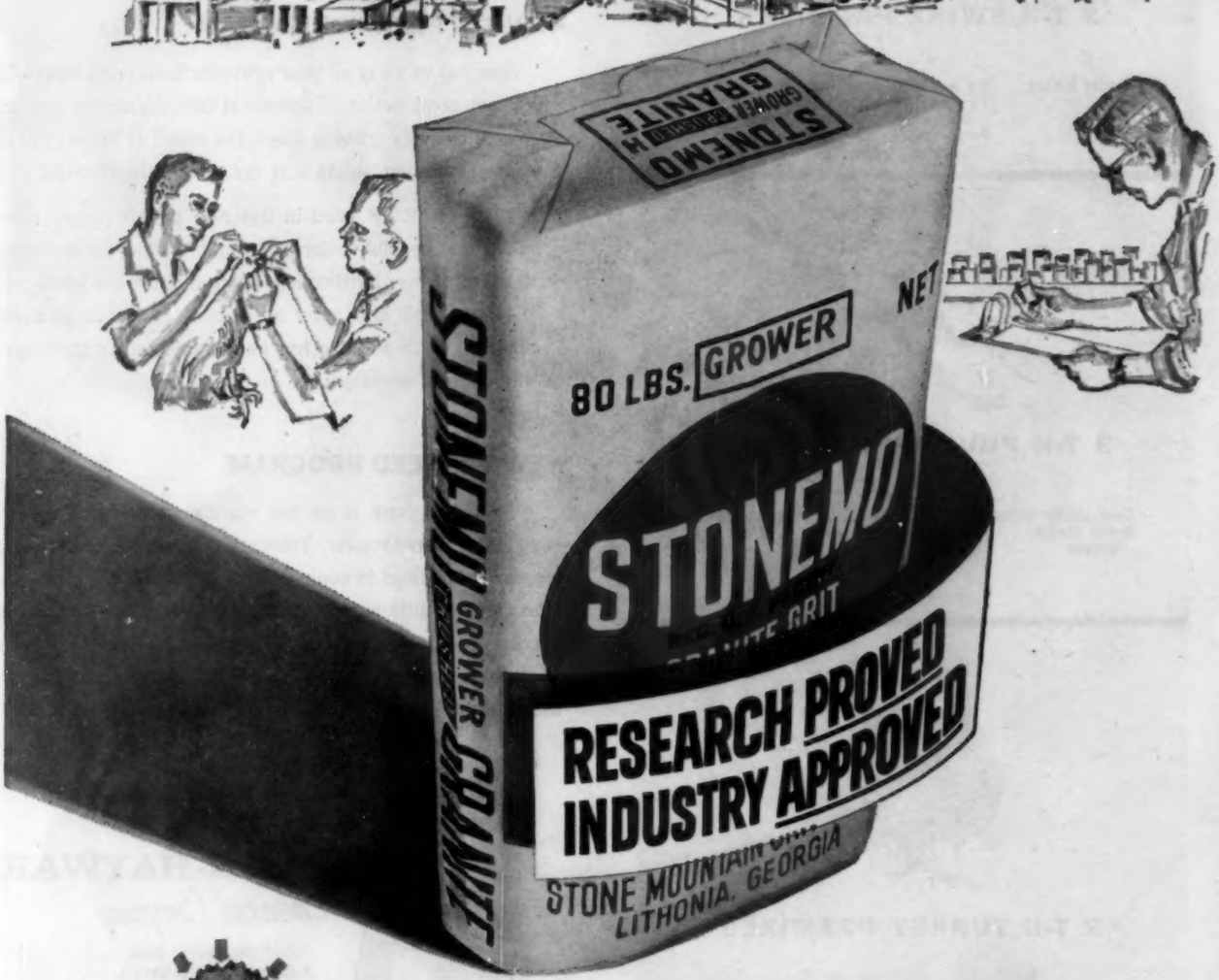
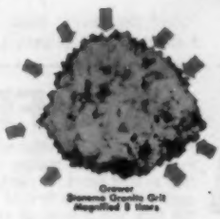
...helps Birds Produce More Eggs or Meat from their feed







Grower Stonemo Granite Grit Magnified 9 times

The Grit with the "EXTRA GRINDING SURFACES"

STONE MOUNTAIN GRIT COMPANY, INC., Lithonia, Georgia

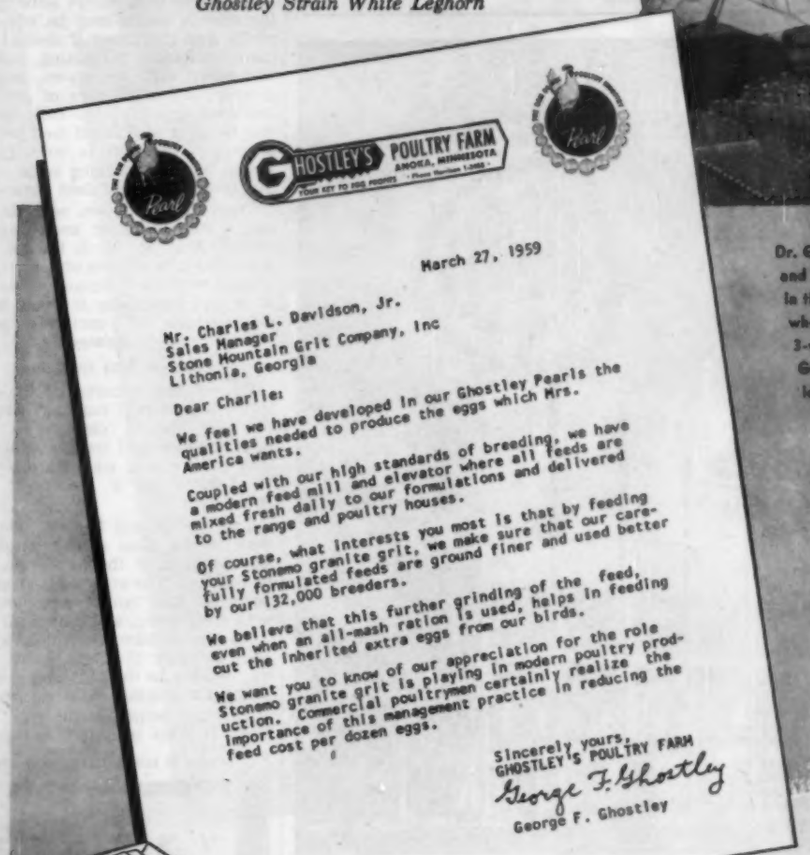
"STONEMO GRANITE GRIT helps grind out of the feed the inherited extra eggs from our birds."

says

Dr. George F. Ghostley

originator of the
Ghostley Strain White Leghorn

Dr. George F. Ghostley and Ray C. Mickelson in the Blood Laboratory where the genes of the 3-way strain cross the Ghostley Pearl were identified.



GHOSTLEY'S POULTRY FARM
AMOKA, MINNESOTA

March 27, 1959

Mr. Charles L. Davidson, Jr.
Sales Manager
Stone Mountain Grit Company, Inc
Lithonia, Georgia

Dear Charlie:

We feel we have developed in our Ghostley Pearls the qualities needed to produce the eggs which Mrs. America wants.

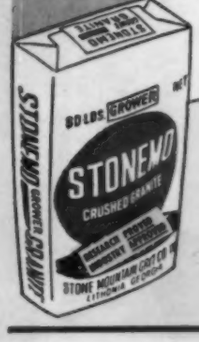
Coupled with our high standards of breeding, we have a modern feed mill and elevator where all feeds are mixed fresh daily to our formulations and delivered to the range and poultry houses.

Of course, what interests you most is that by feeding your Stonemo granite grit, we make sure that our carefully formulated feeds are ground finer and used better by our 132,000 breeders.

We believe that this further grinding of the feed, even when an all-mash ration is used, helps in feeding out the inherited extra eggs from our birds.

We want you to know of our appreciation for the role Stonemo granite grit is playing in modern poultry production. Commercial poultrymen certainly realize the importance of this management practice in reducing the feed cost per dozen eggs.

Sincerely yours,
GHOSTLEY'S POULTRY FARM
George F. Ghostley
George F. Ghostley

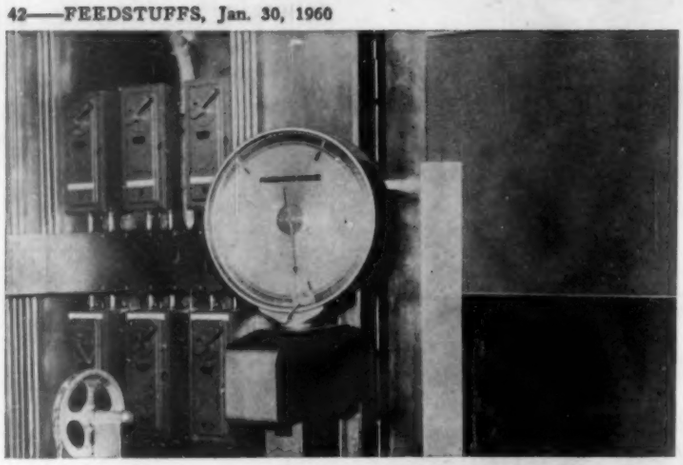


STONEMO
GRANITE GRIT

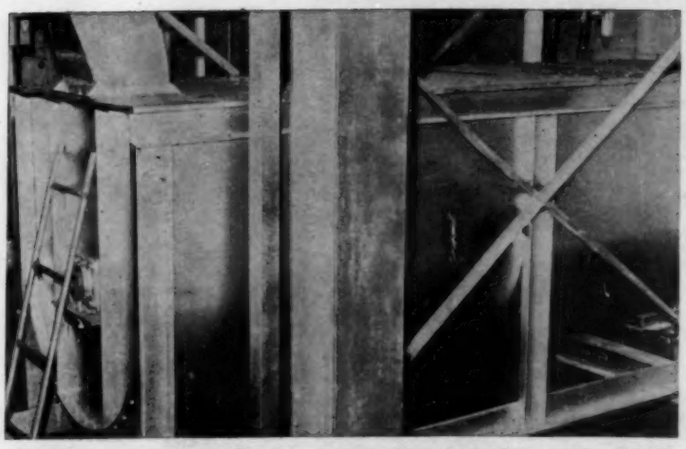
The Grit with the "EXTRA GRINDING SURFACES"

For fast, efficient feed conversion into *extra* eggs or *heavier* meat, follow the profit-tested STONEMO feeding directions... Feed Stonemo Starter (formerly fine) for first three weeks, Grower (formerly medium) from fourth until end of sixth week, Developer-Layer (formerly coarse) after the sixth week. STONEMO pays off in *extra* profits.

STONE MOUNTAIN GRIT COMPANY, INC., Lithonia, Georgia



SCALE DIAL—Shown here is scale dial for batching operations. Scale hopper is at right.



MIXER—A 2-ton Strong-Scott horizontal mixer is used for mixing in the Staley mill. A surge bin may be added later if desired.

storage space. This includes 22 welded steel tanks—8 ingredient tanks, 4 surge tanks and 10 bulk load-out tanks. In addition, there is some 27,000 bu. of grain storage space in 4 welded steel tanks adjacent to the mill.

The 22 overhead tanks are mounted on structural steel over the milling area and load-out driveway. They serve as combination storage and work bins, grinding and pelleting bins and bulk load-out bins, and also form the roof of the mill.

A push-button batch mixing set-up is used for the mixing, with all ingredients in bulk except some micro-ingredients which may be added directly into the mixer if desired. One man can handle the mixing, pelleting and other mill operations, while a second man takes care of receiving and loading out of the bulk feed. If any bagging of finished feed becomes necessary, the mill is arranged so that a portable bagging scale can be put under bins and feed sacked off.

The entire operation, said Mr. Staley, is very compact and easily operated. Also, he noted, the set-up is such that no problems are anticipated in feed production, including the handling and processing involved in the manufacture of complete pellets which include roughage.

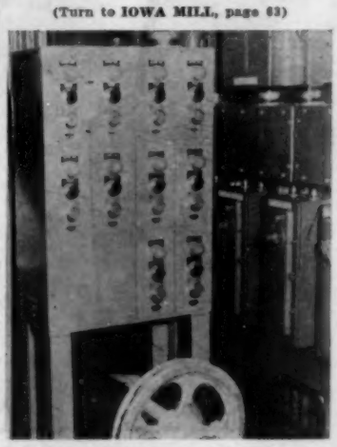
Simple Mill Building

One of the features of the plant is the simple mill building, which is basically just an elaboration of a bulk handling and transfer station in which a group of steel storage tanks is mounted on a structural steel framework.

The Staley mill has one floor, at dock height, plus a full basement. The tanks over the mill form most of the roof. The structural steel supports for the tanks were enclosed with steel siding, and that is all there is to the building. In the interstice area between the bins, steel plate was welded to the bins and supports to form a weather-tight covering.

The mill section of the plant is 30 by 40 ft. This is located beneath the

(Turn to IOWA MILL, page 63)



PANEL—Control panel for batching and mixing is shown here. A manual push-button system which activates screw feeders beneath the ingredient bins is used in batching.

"... third addition of Fitzpatrick Bulk Storage Tanks ... very well pleased with performance of equipment."

Fred M. Conklin, Operations Manager, Alabama Flour Mills, Decatur, Alabama, says, "Alabama Flour Mills recently enlarged the bulk RED HAT Feeds storage by erecting eight 13-ton Fitzpatrick tanks. This is the third addition of Fitzpatrick tanks. We are very well pleased with the performance of this equipment. All tanks were built by the Fitzpatrick erection crew, and the quality of workmanship was satisfactory in every respect. Based upon our experience, we would certainly consider Fitzpatrick Tanks for any expansion of bulk feed storage."

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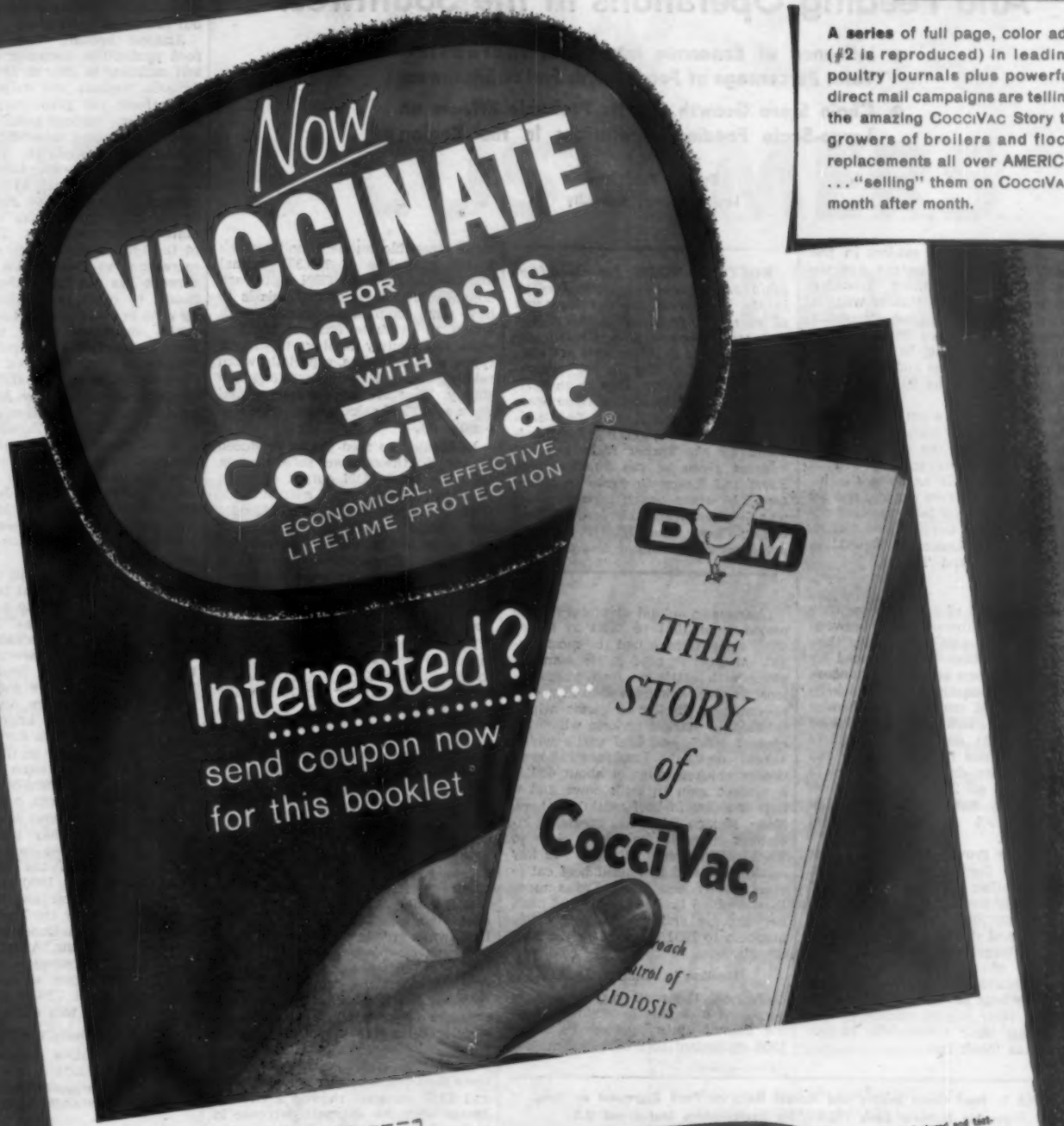

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Impact of Increasing Feed Grain Production And Feeding Operations in the Southwest

- **Influence of Economic Interest in Increasing Total Percentage of Feed Grains Fed in Southwest**
- **Chain Store Growth and Its Probable Effects on Large-Scale Feeding Operations in the Region**

By Dr. Paul Roy
Louisiana State University

Probably no other subject in the recent history of American agriculture has attracted more attention than economic integration or what is more commonly called "contract farming." We believe that contract farming is beginning to emerge in beef cattle operations and will be the key that unlocks the future of that enterprise.

My objectives are to: (1) Consider the influence of economic integration in increasing the total percentage of feed grains actually fed in the Southwest; (2) examine the influence of chain store growth and its probable effects on large scale feeding operations in the Southwest (Arizona, Arkansas, Louisiana, New Mexico, Oklahoma and Texas).

Part I

A comparison of animal consuming units in the southwest region between the years 1951 and 1958 shows this: (1) Hog numbers were reduced by one half, (2) hen and pullet numbers dropped by one third, (3) chickens raised dropped one half, (4) broiler chickens and market turkeys doubled in output, (5) dairy cow numbers were off by one fifth, (6) horse and mule numbers dropped in half, (7) stock sheep, off 20%, (8) beef stock about steady, but (9) beef cattle on feed rose 50% and sheep on feed about 30%.

Thus, the growth in broiler, cattle and sheep feeding was significant. However, other important factors are obscured by these data. For example, the decline in hogs, layers, farm chickens and dairy cows may be attributed largely to the decline in numbers of non-commercial farms where thousands of these animals had been kept previously. In the aggregate, their animal numbers were large, but their commercial importance was much less.

EDITOR'S NOTE: Increased feed grain production and cattle feeding in the Southwest are developments of interest to feed men in that region and other regions also. Certain aspects of these developments are considered by Dr. Roy in the accompanying article. Dr. Roy is an agricultural economist at Louisiana State University, Baton Rouge. This article was adapted especially for Feedstuffs by the author from a panel address given at the Southwestern Farm and Ranch Institute in Houston. The other panelists were Durwar Lewter, livestock feeder, Lubbock, Texas, and W. W. Prince, president of Armour & Co., Chicago.

Changes in animal units during the period from 1951 to 1958 by states show this: Arizona had the most significant gain in beef cattle numbers along with cattle on feed which almost tripled. Arkansas showed greater gains in broiler chickens which doubled, in market turkeys which increased 600% and beef cattle which almost doubled. Louisiana showed broiler chicken gains of about 400%, a modest gain in milk cows and a 50% increase in beef cattle numbers. New Mexico showed greatest increases in cattle feeding or close to 300%. Oklahoma doubled turkey marketings and increased beef cattle numbers by one third. Texas more than doubled broiler output and market turkeys and rebuilt beef cattle numbers to 1951 levels after the long drouth.

Decline in Animal Units

Over-all, the southwest region experienced a decline in grain consuming animal units between 1951 and 1958 equivalent to 2 billion, 2 million total digestible nutrient units which meant a decline of 183,333 animal units consuming 1,200 TDN units each annually. The logic behind this is to have some common denominator with which to evaluate changes in livestock and poultry numbers to various types, ages and sizes, especially when relating animal numbers to grain supply. That is why we use animal units and TDN calculations. (See Appendix A).

In turning to feed grains produced in the Southwest, we note that in 1950 the total TDN output of grain feeds was 15 billion, 431 million units. Corn accounted for about 40%, milo 50%, while oats, barley, wheat and rye grain accounted for the remaining 10%. Rice-by-products fed to livestock and poultry were not available in these data, but would have increased TDN output especially in Louisiana, Arkansas and Texas.

By 1957, the southwest region had increased feed output by about 3% or to 15 billion, 815 million TDN units. Milo now accounted for 75% while corn dropped from 40 to 12% with oats right behind at about 9%. Barley, wheat and rye accounted for the remaining 5% (Table 1). The decline of corn is due to increased emphasis on soybeans planted alone, diversions to pasture and hay acreage as well as to other more profitable uses. Importation of corn down the Mississippi River as well as by truck proved to be a worthwhile substitute for southwestern corn acreage which was low yielding and erratic, required much labor and did not store well. Downward trends in horse and mule numbers, disappearance of farm layers, hogs for home slaughter and elimination of the family milk cow have all contributed to the lessening pressure on corn for feeding on the smaller family farms in the Southwest.

Individual states varied a lot in their feed grain output between 1950 and 1957. Arizona showed a net decrease with the sharpest decrease in barley but with gains in corn, oats, milo and wheat. Arkansas also showed a net decrease in feed TDN output with the sharpest decline in corn. Modest gains in other feed crops were recorded. Louisiana showed a net decrease also in feed output with the biggest decline in corn. New Mexico showed a net increase in feed grains with modest gains in corn, barley, wheat and rye. Oklahoma showed a sizeable decline in feed output, with corn showing a 20 million bu. decline and milo a 2 million bu. drop. However, oats, barley and rye showed modest gains. Texas was the hero of the feed grain parade by showing a strong 1.8 million TDN increase in feed grains despite the loss of 54 million bu. of corn between 1950 and 1957. Milo gained 329 million bu., while oats and barley helped also. Except for Texas, the southwest region would have been much more deficit in feed in 1958 than in 1950.

Grain vs. Animals

How does the feed grain output compare with the animals to feed? In 1951, the region as a whole produced 70% of the feed required by animals on hand but increased this to 80% by 1957. Texas was mainly responsible for this improvement. In fact, Texas was deficit only by 3½% in 1951 but became a grain surplus state by 32.5% in 1958. Of course, a lot of the milo was and is under price supports, so the net milo feed available for feeding is not that much but the trend looks good.

Arizona became very deficit in feed production, dropping from 52% self sufficient in 1950 to 23% in 1957. Arizona feedlots are consuming much feed; yet grain output is not keeping up, necessitating corn and milo imports plus searching for other available feed products.

Arkansas, likewise, became very deficit, dropping from 44% self-sufficient in 1950 down to 30% in 1957 or the most quantitative feed deficit state in the Southwest. This is due to the broiler and turkey enterprises increasing so fast, while lost corn acreage has not been adequately replaced by other feed grains such as by milo in other states. Louisiana remains about the same to slightly more feed deficit at around 35%. The decline in feed produced there has been offset by a comparable decline in animal units. New Mexico improved its feed position, increasing to 64% from 57%. Feed output increased slightly, while animal units declined. Oklahoma also improved its relative position by 2% but with sharp declines in both feed output and animal units. Texas lost 1.1 million animal units between 1951 and 1958 but gained 1.8 billion TDN feed units.

Feed grain output will not decline further in the Southwest but, instead, will increase, especially for corn in Louisiana and Arkansas. The future of milo in Texas, Oklahoma, Arizona and New Mexico will serve to answer that area's future in feeding operations. The cotton, rice and sugar allotment programs are also involved in these calculations. Imports of corn and other feed grains down the Mississippi are a factor in the future of Arkansas and Louisiana feeding. Truck and rail imports of feed grains from the west north central states to the West Southwest are important.

In looking at hay production in the Southwest, we see Louisiana, New Mexico and Texas showing large increases between 1950 and 1957 but the over-all percentage increase of hay harvested for the Southwest was 17% while the national average was 18%. In soybeans, Arkansas is the standout. It increased output by 98% and for the region as a whole, soybeans increased 72% while the national average was 40%.

Main Points for Future

The main points for the future of feeding operations in the Southwest are these: "Because feedlots will become more standardized in layout

TABLE 1. Feed Grain Supply and Animal Units on Feed Expressed on Total Digestible Nutrient Basis (TDN), Six Southwestern States and U.S., 1957 (Feed Supply) and 1958 (Animal Units on Feed)

A. Feed TDN Produced

State	Corn	Milo	Oats	Barley	Other*	Total TDN (000's omitted)
	per cent					
Arizona	18.8	65.9	3.5	10.4	1.4	379,954
Arkansas	57.4	15.8	22.4	3.5	.9	1,152,979
Louisiana	89.6	1.1	8.0	...	1.3	717,157
New Mexico	14.5	75.9	2.4	5.2	2.0	485,354
Oklahoma	15.1	42.8	21.2	16.8	4.1	1,543,661
Texas	1.7	89.6	6.8	1.8	.1	11,535,640
Southwest	11.8	74.6	9.2	3.6	.8	15,814,745
U. S.	69.2	10.4	12.6	7.0	.8	233,427,248

B. Animal Units Fed

State	Hogs	Poultry	Dairy	Beef	Other†	Total TDN needed (000's omitted)
	per cent					
Arizona	2.4	4.0	5.3	81.0	7.3	1,660,546
Arkansas	12.3	62.2	14.6	6.3	4.6	3,856,620
Louisiana	22.0	25.0	27.2	16.3	9.5	2,016,808
New Mexico	5.5	7.4	10.0	56.9	20.2	762,850
Oklahoma	18.7	20.6	23.9	30.4	6.4	2,663,832
Texas	14.6	37.2	14.6	26.5	7.1	8,708,615
Southwest	14.0	34.6	16.2	27.8	7.4	19,669,270‡
U. S.	32.9	25.2	16.1	22.3	3.5	222,512,040

*Includes wheat and rye grain.
†Includes sheep and workstock.
‡The Southwest has 6.8% of the U.S. feed supply but 8.8% of the animals on feed.
Source: USDA data except for TDN calculations.

APPENDIX A

I. Feed TDN Calculations:

Grain	% TDN per bu.
Corn	47.5
Oats	22.4
Barley	37.3
Milo	43.4
Wheat	48.1
Rye	42.6

II. Animal Unit Conversions From Dairy Cows: One head — one A. U.

Hogs	1.7
Layers	25.0
Chickens raised	65.0
Turkeys	10.0
Broilers	87.0
Dairy heifers	1.0
Dairy calves	2.5
Workstock	.7
Stock sheep	35.0
Sheep on feed	8.0
Beef cattle	5.0
Beef on feed	.5

III. TDN Required Per Animal Unit. Calculations yielded 1,200 TDN per animal unit.

Source: T. D. Aaron, Economic Analysis of Feed Grain Situation in Georgia, Ga. Ag. Exp. Sta. Bul. No. 37, February, 1957.
Agricultural Statistics, USDA, Washington, D.C., 1952 and 1958.

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MEMORIAL FUND — Jack Grubb (left), Naturich Feed Mills, Abilene, presents a $500 check in behalf of Kansas feed manufacturers to Kansas State University to honor the late John L. Monaghan, former director of the feed control division of the Kansas State Board of Agriculture. Dr. John Shellenberger (right), head of the university's department of flour and feed milling industries, accepted the check.

and materials handling and feed procurement itself standardized by areas, then the two remaining variables will become relatively more important. One is marketing structure and the other feed efficiency of animals fed. Standardization in these two areas seems to be a long way off but must be met. The beef enterprise is probably further behind any segment of animal agriculture in knowing what they are feeding and the reasons for the variations thereof. In the future, the operator who relies on data and performance test records rather than the eye will forge ahead. We could pay much more for feeders, if we knew what feed efficiency was behind the bull and cow.

Feed Firms May Feed

Another factor is that feed companies may enter into extensive feeding operations in search of feed tonnage stability. Spencer Kellogg & Sons, Inc., has entered the field in Kansas; Alabama Flour Mills in Alabama, and many others.

The point remains that stocker and feeder cattle and sheep are being shipped out of the Southwest for feeding in other areas. This fact is causing feeders to wonder whether they could not be fed profitably at home, especially when feed supplies in relation to available livestock numbers keep improving. For example, about 13% of the shipped-in cattle in the north central states come from the Southwest. In sheep and lamb shipments, about one fifth of their receipts were from the Southwest. In addition, feeders are being sent outside the Corn Belt, so the total out-shipments are staggering when one puts it in this perspective.

The under-development of packing facilities in the Southwest, long a disadvantage, can now be turned into an advantage. Plants that are modern, efficient and operate at capacity through contractual arrangements can accomplish this. For example, data on 15 older meat packing plants show that net income as a percentage of net assets averaged 4.3% in 1957. This lowest return among all manufacturing plants indicates less-than-capacity use and less efficient, older plants, many of which were not tied to more modern marketing procedures including supply control. For example, Armour & Co. is expanding and re-locating its Southwest operations.

Part II

Influence of chain store growth upon feeding operations: By chain stores, we refer to the increasing volume of retail food sales which are under the control of either of three types of chains, viz.: (a) Proprietary profit-type chain such as A&P, (b) profit-type retail store units which own and operate a cooperative, non-profit wholesaling operation such as IGA, and (c) profit-type retail store units which are coordinated with and have working agreements with a profit-type wholesaler or the so-called voluntary chains. Beyond that, the retail food business is left to the seven-day a week, late hour, profit-type chains of small individual stores such as Pak-A-Sak, Pak-A-Bag, Tote-A-Sak, etc.

For all these chains, regardless of their operating structure, their main problems in meat procurement are volume of and reliable supply of meat tailored to their customer demand consisting both of fresh and frozen supplies. Since their volume in any one type of meat is sufficient to permit economies-to-scale, the broiler processor can stand alone in his dealings, the frozen meat distributor can stand alone and the beef meat packer can stand alone in his specialized operation unlike two decades ago when the packer supplied eggs, bacon, beef, poultry, etc. This may account for the relative decline of the central packer in being less specialized in any single one of these lines.

After all, we have 3,200 meat processors in the U.S., plus 11,000 other smaller slaughterers. We also recognize that it is better to be small but yet utilize capacity fully than to be large and operate at under-capacity. To operate at optimum capacity, you must coordinate the input with the output, not subject yourself to chance hoping that the supply will come around. Maybe it will and again it might not. Can you imagine a broiler processor operating like a beef packer? A California report shows that half of the west coast packers concentrate on one type of meat and many cater to only one type of customer. (Dietrich, R. A. and W. F. Williams, "Distributing Meat in L. A." Agricultural Marketing, AMS, USDA, Washington, D.C., July, 1959.)

Why have some chain stores moved into cattle feeding and slaughter? Partly because of the profit motive, but more importantly because they desired to stabilize and regulate the supply of beef coming into their markets and thus stabilize meat department profits over time. If chain food store consumers are more exacting in their preferences such as in grain-fed beef and of certain grades, then chain

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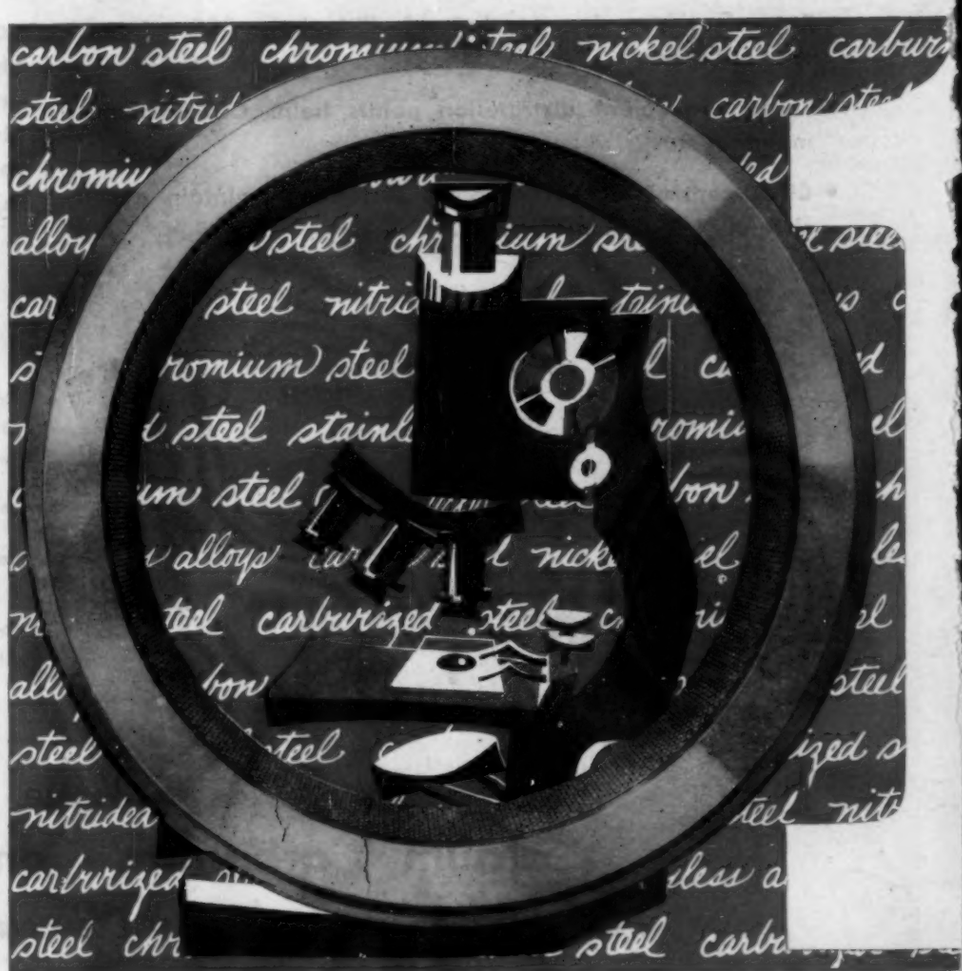

JS/115 P

food stores will seek to supply this demand, regardless of the cattle feeder's claim that there may not be a profit in finishing cattle in 1960 or 1961. About half of the beef consumed at present has been fed some grain and this proportion will increase. It is well to study the recommendations of some experts both in colleges and the trade who say that perhaps next year beef feeding will not pay; thus give it up for one year. A chain food store cannot give up for one year and then come back in because consumer demand is not that cyclical. We learned that lesson many years ago in broiler feeding and slaughter, but evidently the other meats have yet to learn of this.

Federal Action

The threat of federal action against food chains engaging in the meat processing and cattle feeding operations is going to be more serious. The Roosevelt Small Business sub-committee announced Oct. 20 that it intended to look into this situation upon receipt of many complaints from smaller processors and retailers.

The odd part about all these controversies is this: The 1920 Consent Decree prevents the big meat packers from engaging in wholesale and retail grocery activities. But nowhere else does one find anything about food retailers not engaging in meat packing. If we do face a threat of some sort from somebody, I would say the threat is much more serious from the chains going into meat packing than is the threat of meat packers going into the wholesale and/or retail grocery business.

Another irony of this situation is that the food chains have escaped the Federal Trade Commission by claiming they were meat packers and thus fell under jurisdiction of the U.S. Department of Agriculture and the packers' section of the Packers & Stockyards Act of 1920. Some 2,000 companies are now registered with USDA as packers including A&P, Kroger, National Tea, Procter & Gamble, Carnation, Stokley Van Camp, Beatrice Foods and others.

If the chains are going to control over 90% of the retail food business, and they will, then they have the possible economies-to-scale to get into anything and make it pay-off—from baking bread, canning vegetables and packing eggs to feeding beef. But they do not seek this route unless they are forced into it by the inaction of others. They prefer to allocate whatever capital they have in the inventory, not in the facility. As an alternative, they prefer working agreements under their label which yield them the same net effect to their consumers but yet eliminate the facility investments.

TABLE 2. Population and Buying Power of Southwest States, 1959

State	Population Jan. 1, 1959	Urban population %	Income per household	No. of households	Total annual buying power (billion dollars)
Arizona	1,162,200	67*	5,721	328,500	1.879
Arkansas	1,755,500	42	3,991	485,600	1.938
Louisiana	3,132,600	60*	5,093	853,200	4.345
New Mexico	900,800	62*	5,732	232,300	1.332
Oklahoma	2,276,000	61*	5,065	677,300	3.431
Texas	9,534,400	73*	5,602	2,710,100	15.181
Southwest	18,761,500	66	5,316	5,287,000	28.106

*These states now classified as "urban" states; Arkansas classified as "rural."

Consumer Preferences

The American consumer is trending toward leaner and tenderer beef not necessarily high in grade by U.S. grades and standards. Dr. R. E. Branson of Texas A&M and others have shown by their research that meat consumers in Houston and elsewhere preferred U.S. Good grade of beef even when U.S. Choice and U.S. Prime were offered at the same price per pound in the retail chain store. Bright red color and leanness of meat, not fat, are the prime requisites of chain store customers.

Sylvia Porter, a syndicated economics writer, recently stated that a food chain survey of 100,000 consumers revealed that 33% of them put "dependable quality meats" as first among factors influencing the choice of a supermarket. This same factor was also ranked second by 17.5% of the consumers, so about one half of the nation's food buyers, it may be assumed, consider the meat department as either first or second in its influence on their shopping patronage. Food chains have long argued that this was why they "footballed" broiler chickens in order to pull customers in the store. However, other answers in this survey would tend to depreciate that contention.

"Low prices" received only 19% of the first-place votes and only 12% of the second-place votes. The answer seems to be that the food chain which can, in the future, merchandise meat regularly at fair mark-ups and accurately reflect consumer preference will no doubt forge ahead of competitors in total food sales and net profit on sales. This means that beef, pork and lamb in that order will come in for more attention in the next five years as far as food chains are concerned. We hope also that broiler chickens will be footballed to a lesser degree, although loss leaders will no doubt continue.

Conclusion

In conclusion, the consumer buying market in the Southwest merits analysis. Population increases and increased buying power of consumers are outstripping the rest of the nation (Table 2).

We suspect that consumer buying power in the Southwest will increase much faster than in the rest of the country during the next few years. Ordinarily when a family's income goes up, the people eat a little more food. But the big change is in what they pay for food. They usually buy better cuts of meat and more expensive foods they formerly felt they couldn't afford. This fact should help

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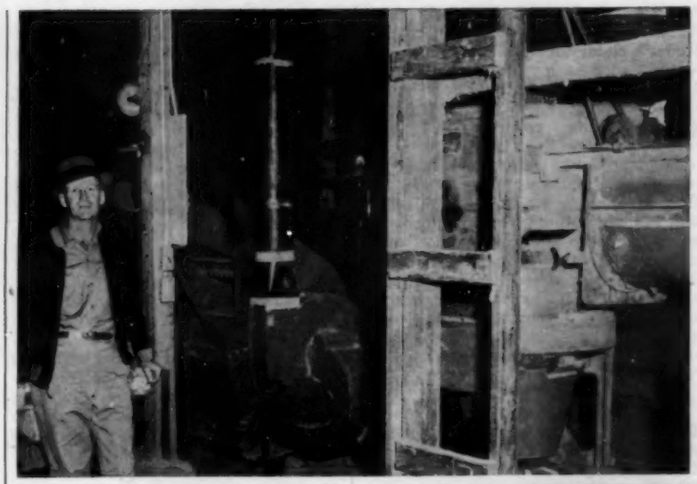

ALFALFA PELLET PLANT—Clyde Alexander (above), plant manager, stands beside processing machinery in Scales Hay Co. sun-cured alfalfa pellet plant at Pleasanton, Kansas, which has been producing pellets for a couple of months. Equipment includes a Winsted bale shredder, an O. B. Wise hammermill and a California pellet mill. A belt conveyor carries the finished pellets into a bin from which they are augered into rail cars or trucks. Alfalfa pellets produced in the plant are examined by Clyde W. Scales (right), owner and manager. The firm has been brokering most of its production with Kansas City firms.

beef and lamb more than it will help pork or poultry in the Southwest itself.

Economic integration in cattle feeding, slaughter and retailing will develop at a faster rate in the next few years than had been estimated only one year ago. The reasons are simple: The food store wants beef that meets its customers' specifications and on a regular, dependable basis at as low price as possible.

The feedlot operator will meet this demand, but, in so doing, he will insist on feeders that meet the final consumer demand, plus being efficient feed-converting animals available year-round. The cattlemen, therefore, will have the most difficulty in adjusting because they have the most adjustments to make and are already slow in making them. It behooves the colleges and the trade to coordinate their efforts so that these adjustments are as painless as possbile.

New Jersey Receives Grange Research Aid

NEW BRUNSWICK, N.J. — Research grants totaling $31,900 have been received by the New Jersey Agricultural Experiment Station from the Grange League Federation, Inc.

The grants were as follows: $3,000 for research on how amino acids are absorbed and the role they play in the nutrition of the chick; $4,000 for research on amino acid requirements of the laying hen; $4,000 for a study of the interrelations of disease and nutrition in poultry; $4,000 for a study of the role of sulfur and amino acids in rations of laying hens, and $1,500 for studying the response of laying birds to various caging methods.

A grant of $4,500 will be used to determine the comparative efficiency of different dairy cattle to utilize rations high in roughage and to defray the cost of the educational program for a graduate student; $3,000 for support of a graduate student whose problem is to develop corn varieties having shorter stalks, less susceptibility to lodging and easier to harvest; $2,500 to further the research of a graduate assistant on weed competition in crops and measures for their control; $1,000 for research dealing with methods of renovating pastures; $3,000 for research on establishment, culture and maintenance of turf; $1,200 for expansion of investigations into methods of calibrating and improving the effectiveness of the soils department's service program, and $200 for further endowment of the Headlee Fellowship, a basic research program dealing with insect physiology.

MILL WORK BEGINS

SHERIDAN, WYO. — Excavation has begun here for a new $100,000 feed mill. The mill will produce feed for livestock and poultry, utilizing local grain primarily and will serve the Sheridan area and nearby Johnson County.

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Research, Management, Pelleting Discussed at Kansas Conference

By DR. PAUL E. SANFORD
Kansas State University

MANHATTAN, KANSAS — The 15th Kansas Formula Feed Conference got off to an excellent start with a buffet supper Jan. 3. Industry and university personnel enjoyed an evening of informal fellowship.

"Dynamic Careers Through Agriculture" was the title of a film that informally, but officially, started the conference program.

MANY FEED FORMULAS—"Why So Many Feed Formulas?" was discussed by Dr. Charles Lewis, vice president and director of research and nutrition, Kent Feeds, Muscatine, Iowa. Dr. Lewis cited the following five reasons in answering the question:

1. **Need** for more feed to apply recent research and new findings to obtain more meat, milk, eggs and wool.

2. **Desire** to get ahead of the competition.

3. **Competition** between companies to meet demands.

4. **Service** for helping customers to overcome problems of stress, supply a wormer feed, special additives and such.

5. **Customer demand** to fit into specific need such as mash, granules, pellets, bulk delivery, paper bags, returnable burlaps and such demands as "fad-type feeds" or the idea that "because Grandpa had it, we too have to have it." In other words, "Whims of customer demands."

PROTEIN FOR LAYERS—"Protein Needs of Laying Hens" was discussed by Dr. James E. Marr, general poultry research division, research department, Ralston Purina Co., St. Louis, Mo.

Dr. Marr spoke of the importance of a proper understanding of the role of protein in the laying ration for producing eggs at the least cost at the farm level for our dynamic poultry industry. Dr. Marr cited that proteins supply the essential building materials for all plant and animal cells, and are components of all enzymes, vitamin systems and hormones, and thus are intimately associated with all or nearly all of the diverse chemical reactions occurring in living tissue.

Dr. Marr stated that a question has been raised in recent years as to whether a level of 15% protein in high energy laying diets is adequate for hens producing at a level of 85-90% and consuming 3.5-4 lb. feed per dozen eggs. Some research workers have reported that higher levels (16.5-17%) are needed for optimum performance.

According to Dr. Marr, there are several factors which may influence the protein requirements of laying hens, and regulate the dietary protein level that will be used in the future. It is clear that expressing the protein requirement as a percentage of the ration is convenient for feed formulation, but is less desirable than considering it in relation to environmental conditions that affect daily feed intake, body weight, rate of egg production and calorie level of the ration.

There is ample evidence to establish the relative proportions of essential amino acids in the diet as a more important feature than protein level. Dr. Marr said, "There are evident reasons for believing that in the future, the protein level for laying hens will be reduced." Dr. Marr cited data based on seven months

(Turn to page 54)

About the Author Of This Report

Dr. P. E. Sanford

Dr. Paul E. Sanford, author of the accompanying report of the 15th Kansas Formula Feed Conference, received a bachelor's degree in agriculture with a major in poultry husbandry from Kansas State University in 1941, an M.S. degree in poultry nutrition at Iowa State University in 1942 and a Ph.D. degree in poultry nutrition at Iowa State University in 1949.

His research has included a study of the effect of cereal grains and their by-products on plumage development and body growth of the chick, and factors influencing the thiamine requirement of the chick.

He joined the Kansas State University staff in 1949 as an associate professor in charge of research and teaching of poultry nutrition. Research has involved vitamin B_{12}, antibiotics, vitamin A metabolism, quantity and quality of protein, unidentified growth factors, nutritional factors related to egg shell quality and physiology of light.

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B. CUSTOMER PROBLEM—The Ozark formula has a high fat content, with a tendency to "bleed" through normal multiwall bag construction.

BEMIS SERVICE SOLUTION—Many constructions were tested . . . until the most efficient, economical package was determined—a bag with a special inner ply.

C. CUSTOMER PROBLEM—Due to the excellent product (and maybe partly to the selling package), sales skyrocketed until production ran hopelessly behind (a happy problem, of course). An additional mixer was installed, and then there was a bag-packing bottleneck.

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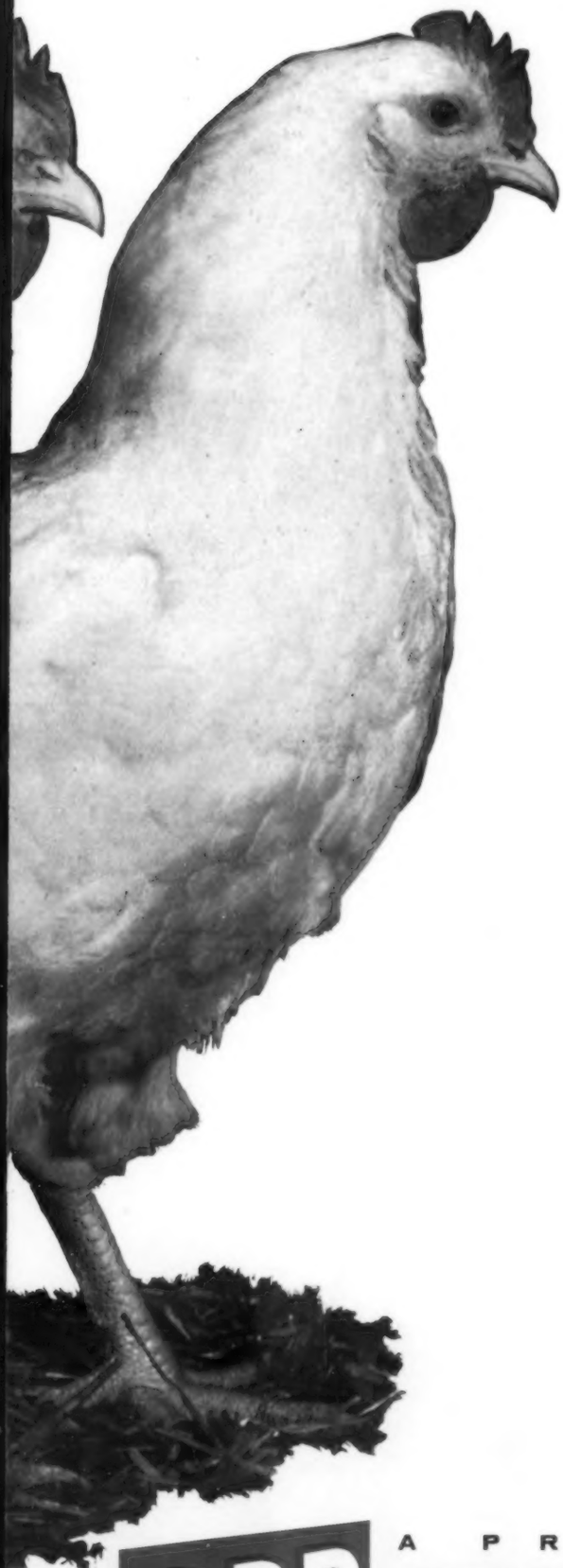

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1. "The Availability of Phosphorus from Different Sources of Poults Fed Purified Diets." Poultry Science, Volume XXXIII, Number 5, September, 1954.
2. "A Comparison of the Availability, to the Young Growing Chicken, of the Phosphorus in Defluorinated Phosphate and Analytical Reagent Grade Dicalcium Phosphate," by Lime Crest Research Laboratory, October, 1954.
3. "The Availability of Phosphorus from Different Sources for Poults Fed Practical-Type Diets." Poultry Science, Volume XXXIV, Number 5, September, 1955.
4. "Phosphorus Availabilities as Determined by New Feeding Experiment," by Lime Crest Research Laboratory, November, 1955.
5. "Phosphorus Availability Assays by the University of Illinois Method," (as presented by Dr. H. M. Scott) conducted by the Laboratory of Vitamin Technology, Inc., September, 1956.

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PRODUCT	Solubility in 0.4% HCl	Solubility in 2% citric acid	Solubility in neutral ammonium citrate	Average total solubility
CDP	100.00%	87.14%	86.16%	91.10%
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TABLE 1. Production Data—April 11, 1959-Oct. 23, 1959

Per cent protein	No. of birds	Hen day % production	Average egg size (gm.)	Feed efficiency	Per cent mortality
13	120	61.6	52.5	4.9	1.67
15	120	72.3	55.7	4.2	4.17
17	120	80.3	57.3	3.6	0.83

production comparing various levels of protein reported from Texas A&M College. This data is presented in Table 1.

The use of less dietary protein will be governed in part by further studies on amino acid requirements for high, sustained egg production and the availability of amino acids at a reasonable price. Dr. Marr stated that it was a challenge to the nutritionist to do everything possible to bring out the bred-in potential ability of the modern laying bird.

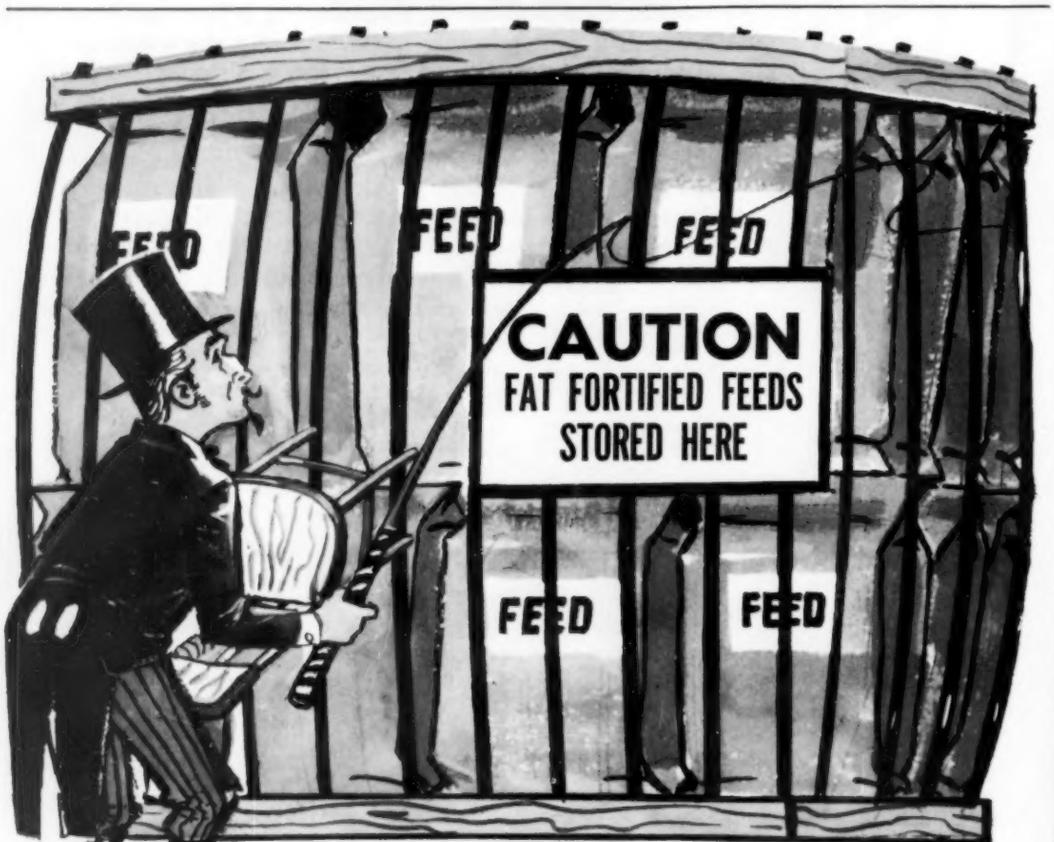
RECENT DEVELOPMENTS FOR LAYERS—Dr. Marr said in regard to recent developments in laying rations, "Re-evaluation of the nutrient requirements and feeding procedures for high sustained egg production is gaining momentum among investigators." Studies on dietary levels of fiber, energy, vitamins and amino acids represent desired advances.

Dr. Marr said research has revealed that oat mill feed, rice hulls, soybean mill feed, peanut hulls and ground corn cobs of uniform quality are good sources of fiber and/or bulk for pullet-developing diets. Full feeding high fiber diets resulted in a substantial increase in feed consumption and a higher feeding cost compared with controlled feeding of medium energy diets. High fiber products become very expensive as a feed ingredient for pullets after grinding and freight charges are added to the purchase price, he said.

Dr. Marr reported that studies conducted with White Leghorns at the research farm showed that supplemental ascorbic acid, 10 mlg. per pound of ration, had no effect on egg production, feed efficiency, body weight, mortality, hatch of fertile eggs or egg shell thickness.

The poultry scientist stated that laying hens deprived of water during high egg production will cease to lay within two days. Water consumption is affected by many factors, among which are temperature and humidity of the environment, activity of the chicken, feed consumption, temperature of the water and type of diet. Dr. Marr reported Purina research has revealed that heating the water to approximately 80° F. from October to April and cooling the water within a range of 50-60° F. from May to September had little or no effect on egg production and feed efficiency.

MEDICATED FEED—Sam Fine, chief, Kansas City district of the Food & Drug Administration, talked on "How the Food and Drug Administration Looks at Medicated



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Feed." Mr. Fine stated there is no evidence of any stilbestrol in beef or lamb products. He also added that all affected poultry has been withdrawn from the market and the implanting of birds with stilbestrol stopped.

VITAMIN A IN ALFALFA—"A New Look at the Vitamin A in Alfalfa" was discussed by Dr. D. B. Parrish, department of chemistry, Kansas State University.

He stated there are four reasons for a new look at the vitamin A activity of alfalfa:

1. Interesting findings from work at Kansas State using only alfalfa as the vitamin A source.

2. Statements in trade releases that carotene is poorly utilized and has limited value as a vitamin A source for chickens.

3. Need to remind ourselves periodically of the value of established nutrients and feedstuffs.

4. New thinking in poultry and livestock feeding, new types of feeds and feed processing.

Several studies have been conducted at Kansas State using alfalfa meal as the only source of vitamin A for poultry. Broiler strain male chicks, depleted of body vitamin A stores, have gained 3 lb. or more between the second and ninth weeks with a feed conversion ratio of 2.1, using carotene in alfalfa meal at levels of 400-800 units per pound of feed as the sole source of vitamin A. Other depleted chicks received carotene in alfalfa meal as the only source of vitamin A throughout the periods of growth plus one full year of egg production for each hen. These results show that carotene is a valuable source of vitamin A activity and do not support recent statements that carotene is poorly utilized and of limited value as a vitamin A source for chickens, he said.

Dr. Parrish reminded that with

(Turn to RESEARCH, page 58)

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FEEDSTUFFS

Putting Research To Work

BY SPENCER H. MORRISON, PH.D., D. V. M.

Pesticide Residues in Meat and Milk, Storage of Dieldrin in Tissues and Its Excretion in Milk of Dairy Cows Fed Dieldrin in Their Diets

and

Pesticide Residues in Meat, Storage of Dieldrin in Tissues of Steers, Hogs, Lambs and Poultry Fed Dieldrin in Their Diets

and

Pesticide Residues in Milk, Insecticide Residues in the Milk of Dairy Cows Fed Insecticides in Their Daily Ration.

By N. Gannon, R. P. Link and G. C. Decker, University of Illinois, Journal of Agricultural and Food Chemistry, Vol. 7, No. 12, pp. 824-832.

ABSTRACT

An experiment was conducted with dairy cows to determine whether or not there was a level of feeding for dieldrin below which contamination of fat, and especially milk, of dairy cows would not occur.

The dieldrin was fed to dairy cows (groups of four) at levels of 0, .1, .25, .75, and 2.25 ppm. in the diet for 12 weeks. At that time, two cows from each group were slaughtered and samples of tissue were collected. To determine the amount of dieldrin which would be lost from the tissues during a six-week feed-off period, the remaining cows were fed on dieldrin-free diets, after which time they were slaughtered. Both rations and milk samples were analyzed before the cows were put on test to insure that they contained no dieldrin residues.

At the end of the 12-week experimental feeding period, dieldrin was present in milk of all cows receiving it and at all levels of feeding. The levels found in the milk for the levels of dieldrin used (.1, .25, .75, and 2.25 ppm.) were .02, .06, .11 and .28 ppm., respectively. A straight-line relationship was observed between dosage and the residues found in the milk. The sensitivity of the assay method was judged to be about 1 ppm. The amount of dieldrin appearing in the milk on any given day was probably due to the daily intake and to the existing concentration in the fat of the animal. The per cent decline in the fat residues after the animals had been off dieldrin for six weeks was only about 30%, while the decline in milk was greater than 80%. The amounts of dieldrin in the other tissues were roughly proportional to the fat content of the tissues.

Dieldrin also was fed in the diet of Angus steers, Yorkshire hogs, Shropshire lambs, White Rock fryers and Leghorn laying hens for 12 weeks (fryers six weeks only) at levels of .1, .25, .75 and 2.25 ppm. (fryers not fed 2.25 ppm. level). Dieldrin was detectable in the fat of all animals fed on the various intakes. For each species, the amount of dieldrin stored appeared to be proportional to the rate of intake. In general, amounts in renal fat were higher than those for body fat. Steak and roast cuts were next in magnitude, while liver and kidney stored the least. At levels of .25 ppm. or less, no dieldrin was measurable in the steaks or roasts of steers.

Showed No Dieldrin

Lambs showed no dieldrin in chops over the entire range of dosages, and the residues found in lamb roasts were so close to the assay sensitivity that they were probably insignificant.

Over the feeding period, lambs appeared to ingest about twice as much dieldrin as steers, while hogs in-

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The important point about the Andersons, father and son, and Frank O'Daniel, their consulting nutritionist, is that they have gone over to scientific feeding 100%. They are not content to try for last year's gains, but aim to improve the record by pioneering with new formulas . . . and they have 10 experimental pens going full blast on new ideas to prove it.

AN EXTRAORDINARY RECORD

Where are they now? If you know cattle, some of these figures will jolt you.

1. Conversion: 8-9 to 1 (remember when 16 to 1 was considered a good rule of thumb).
2. Average daily gain: 3.8 lb. (this is the average gain while cattle are on the Anderson feed lot).
3. Feeding time: 100 days instead of 120 (same finish weight: 1000 to 1200 lb.).

KEY MEN in the Anderson Cattle operation near Emporia, Kans., are (from left) Kenneth T. Anderson, president and co-owner; Maury Bass, district sales manager for Nopco Chemical Company, Newark, N. J., which furnishes the company all its vitamin trace mineral premix; Frank O'Daniel, Kansas City nutritionist and president of the Pro-Vita Company, who acts as Anderson's nutritionist and animal husbandman; and Emil T. Anderson, founder of the firm. O'Daniel, in close concert with Kenneth Anderson, developed the formula for the high-grade supplements containing Nopco premix which are now being used with outstanding success by the Anderson Cattle Co.

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gested only slightly more than steers.

On the other hand, steers stored about twice as much dieldrin as hogs and about five times as much as lambs, but only about 1/10 of the amount found in hen fat. Laying hens stored the greatest quantity of all (species in the fat), but their eggs contained very little dieldrin.

Six weeks after the feeding of dieldrin was stopped, analyses indicated that the content of steer and hog fat had dropped about 40%, while the level in lamb fat had dropped about 70%.

At the highest level of feeding for fryers (.75 ppm) only .1 ppm. of dieldrin was found in drumsticks after six weeks of feeding. Breast and other drumstick samples gave results below the sensitivity of the assay procedure.

The third experiment reported by this group of investigators was conducted to determine the relative rates of excretion of the common chlorinated hydrocarbon insecticides—Aldrin, dieldrin, heptachlor, DDT and methoxychlor. Each of the 18 Holstein cows used was fed a different dosage of insecticide. Rates in terms of parts per million in the diet were as follows: Aldrin, 1, 10 and 40; dieldrin, 10, 50 and 75; heptachlor, 50, 75, 100 and 200; and DDT, 10, 25, 100 and 200; and methoxychlor, 800, 1,000, 4,000 and 7,000.

Fed Individually

All cows were fed individually on the rations for 16 weeks. Milk was sampled at intervals throughout the trial, and, at the end of the experiment, four consecutive milkings were taken and analyzed separately, and these results were averaged to establish a more accurate end point. One cow from each insecticide-feeding group was slaughtered at the end of the 16-week period and her body fat subjected to analyses.

To determine the decline in insecticide content in the milk, the remaining cows were fed on insecticide-free diets for up to 7½ additional weeks. Milk was analyzed at intervals during this period. The epioxide of heptachlor was determined by using a modification of Polen and Silverman method for determination of heptachlor. Cows fed aldrin were analyzed for excreted dieldrin.

The results showed that aldrin (as dieldrin) had the greatest propensity for storage in fat and excretion in milk. At comparable dosages, more dieldrin was stored in fat and excreted in milk when aldrin was fed than when dieldrin itself was fed.

DDT was next in value and appeared in the milk at higher levels than did heptachlor epioxide at comparable dosages. Methoxychlor showed very little tendency to be stored in the body fat or to be excreted in the milk regardless of the large dosages fed.

The relative rates of excretion in milk indicated that aldrin is excreted —as dieldrin—roughly twice as readily as dieldrin itself, 10 times as readily as DDT, 20 times as readily as heptachlor—as heptachlor epioxide—and 1,600 times as readily as methoxychlor.

When the insecticides were removed from the diet most of them tended to disappear from the milk samples in inverse order to their propensity for storage. Methoxychlor was lost most rapidly while DDT was lost less rapidly, but considerably faster than the cyclodiene insecticides. Heptachlor, stored as heptachlor epioxide, was comparable in rate of loss to dieldrin, and thus heptachlor lost some of the advantage of its low propensity for storage. Aldrin's rate of loss was characteristic of dieldrin.

It is also pointed out that the data suggest a possibility that the concentration of an insecticide may continue to show a slight increase over a period of several months. This differs somewhat from a commonly held view that there is a rather rapid initial rise for hours or days, with a later leveling off at a plateau characteristic for each concentration and type of insecticide.

COMMENT

This report is one of the most complete and thorough published studies concerning dieldrin's effects in animals with regards to storage and excretion. Also, the comparative data on various insecticides for possible use on forage crops fed to dairy cows or other livestock is of direct importance to feed men.

It was recently announced by the Food and Drug Administration that effective immediately (Jan. 19, 1960) the use of heptachlor under conditions which leave residues on harvested crops was banned. The FDA action was based on data which showed that in addition to residues of heptachlor, the breakdown product heptachlor epioxide was also present on crops treated with the pesticide. It should be noted that the currently reported Illinois work analyzed for this breakdown product.

The FDA said that the ban was based on work, such as reported above, that residues of the epioxide appeared in meat and milk when forage containing it was fed to experimental animals. No residues of heptachlor itself have been found in meat and milk as yet, it should be pointed out. FDA has stated that data are not yet available to show how much epioxide may be present under varying conditions and that the toxicity of this compound has not been fully evaluated. Interested people or those adversely affected by the FDA order have 30 days from the time of issuance to file their written objections.

Kansas City Co-op Appointments Made

KANSAS CITY — Appointment of Kenneth A. Trautman as manager of the feed mill at Fremont, Neb., and Donald F. Engel as a livestock specialist, has been announced recently by Consumers Cooperative Assn., Kansas City.

Mr. Trautman, 35, was formerly manager of CAA's fertilizer and rendering plants at Eagle Grove, Iowa.

Mr. Engel, 36, formerly with the University of Nebraska serving as an extension livestock specialist, will continue in that type of work, assisting the co-ops and their members in feeding programs relating to hogs, cattle, sheep and horses.

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5. All but eliminated foot rot (a persistent hazard in every feed lot).
6. Virtually eliminated minor health problems that were enough to knock cattle off their feed.

AN OLD CHINESE CUSTOM

As you can see from Items 4, 5 and 6 above, the Andersons are making amazing strides. It is their theory that it is cheaper to do as the Chinese are supposed to do: pay somebody to keep you healthy instead of waiting to be cured after you're sick. Knowing full well that the only profitable cattle are those that finish up to weight and within the time limit, the Andersons work hard at developing an "ideal" ration—one that will build resistance to disease, combat costly setbacks, prevent red nose, coccidiosis, pneumonia, kidney stones, and foot rot.

NOPCO PROUD TO BE PART OF THE PLAN

Nopco is proud to be associated with the Anderson Co. in the "Keep 'em Healthy" Program. Working from formulas developed by O'Daniel, Nopco custom-manufactures Nopco-Pak premixes containing vitamins A, D and E, plus trace minerals in combinations and at levels unique in the industry.

The Andersons have found that Nopco's Micratized® vitamins remain stable in spite of high levels of trace minerals—are still potent when fed. They also like the dispersibility of Nopco's vitamins. Nopco has made a study of particle size in order to assure satisfactory dispersible vitamin products.

CAROTENE DOES NOT SUPPLY ENOUGH VITAMIN A

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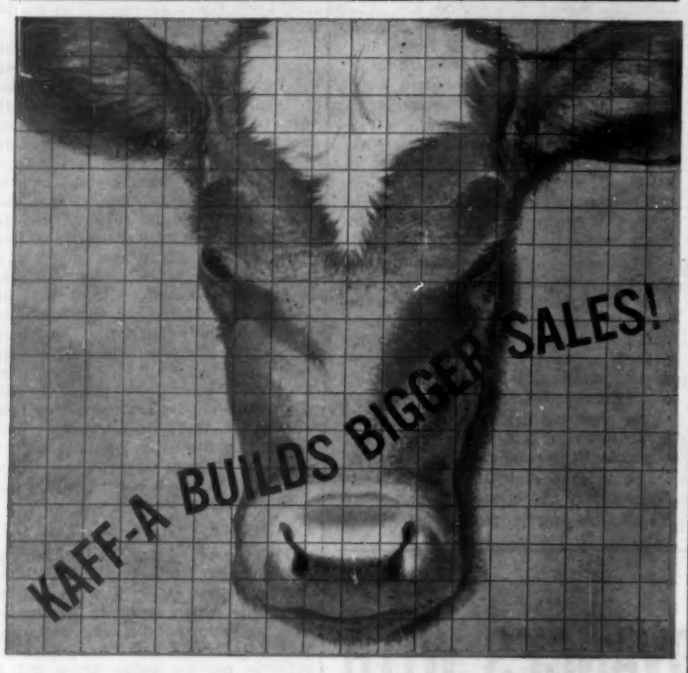

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RESEARCH

(Continued from page 55)

the provitamin A in alfalfa meal (carotene) one gets other valuable nutrients such as water soluble vitamins, other fat-soluble vitamins, minerals, protein (amino acids), growth factors, pigmenters and unidentified factors. These are "plus" factors from the use of alfalfa meal, which together give it a value calculated to be $150 per ton or more, based on market price of nutrients contained.

Dr. Parrish stated that quality meals of known vitamin A activity should be used. Inert gas storage, antioxidants, oils and special heat treatment are methods used to preserve vitamin A potency of alfalfa meal. The newer pelleting and wafering processes do not have much effect on preserving the carotene of alfalfa in the pellets or wafers once they are prepared.

The Kansas State chemist said the newer ideas on restricted feeding of replacement layers and restricted feeding for meat type hog production suggest that the more fibrous, lower grade alfalfas may have increased uses in feeds for special purposes.

Dr. Parrish concluded by saying, "More work is needed on the possible effects of various drugs and other feed additives on utilization of carotene as a vitamin A source. It is possible that some of the field observations reported as vitamin A deficiency are, in fact, the results of inhibitions or toxic effects of feed additives or contaminants."

LIGNIN AND FIBER FOR RUMINANTS—Dr. O. T. Stallcup, professor and dairy husbandman, department of animal industry and veterinary sciences, University of Arkansas, discussed, "What Do We Need to Know About Lignin and Fiber in Ruminant Rations?" Dr. Stallcup said, "Ruminant nutritionists need to think in terms of producing for efficiency." Crude fiber is supposed to represent the less readily available portion of the feed and nitrogen-free extract to represent the more easily digestible carbohydrates.

Dr. Stallcup reported that investigators of the digestibility of grasses and their products have shown that in many materials the crude fiber has a higher digestibility than the nitrogen-free extract. In oat straw, however, much more of the lignin was present in the nitrogen-free extract than in the crude fiber. Numerous workers have found that the stage of maturity influences the composition of plants. The cellulose, crude fiber, lignin, methoxyl, and hemicellulose contents tend to increase with maturity. The digestibility of crude fiber, nitrogen-free extract and cellulose tends to decrease with increasing maturity.

The lignin content of roughages is quite variable, probably due to differences in stage of growth of the plants when harvested. The cellulose content of the crude fiber is much higher in the grass hays than in the legume hays. The lignin content in the crude fiber of the legume hays is usually greater in the grass hays.

Crude lignin separated from plants by means of an acid procedure and then subjected to the proximate analysis shows up in the crude protein, ether extract, crude fiber, ash and nitrogen-free extract fractions. Dr. Stallcup said, "This indicates that certain nutritive substances are trapped by the encrustation of lignin. It also indicates that nitrogen-free extract of mature roughages is quite different in energy value from that of grains and concentrates."

Dr. Stallcup concluded by saying, "Lignin in plants slows up the rate of passage of nutrients through the rumen and thus decreases intake. When added in relatively pure form as Indulin A, but not encrusting other nutrients, it had no influence on digestibility."

METABOLISM IN THE RUMEN—"Metabolism of Oil Meals, Urea, and Amino Acids in the Rumen," was the second topic discussed by Dr. O. T. Stallcup. According to Dr. Stallcup, ingredients utilized efficiently by non-ruminants may not be utilized by ruminants and vice versa. The nitrogen nutrition of the animal is largely controlled by the balance of three processes:

1. Net conversion of dietary protein to microbial protein.
2. Breakdown of ammonia from dietary protein and non-protein nitrogen to ammonia and the extent to which the ammonia is absorbed through the rumen wall.
3. Synthesis of microbial protein from the non-protein nitrogen present in the rumen.

Dr. Stallcup reported that one of the important items in ruminant nutrition is to determine, with protein sources and practical diets, which of these processes are dominant.

Ammonia nitrogen is released rapidly from urea and from urea-molasses mixtures. The danger of alkalosis may be lessened when phosphoric acid or other strong buffering materials are present to keep the pH near 7. Ammoniated invert molasses has some "free" ammonia when fed but the release is negligible beyond this point.

Dr. Stallcup reported that significant deamination, as indicated by ammonia production in the rumen liquor, has been demonstrated when beta-alanine, l-arginine, dl-asparagine, dl-arpartic acid and l-glutamic acid were fed to a steer in the amounts needed to furnish the maintenance requirement of the animal in terms of protein equivalent. The feeding of glycine, l-leucine, and l-lysine did not result in significant

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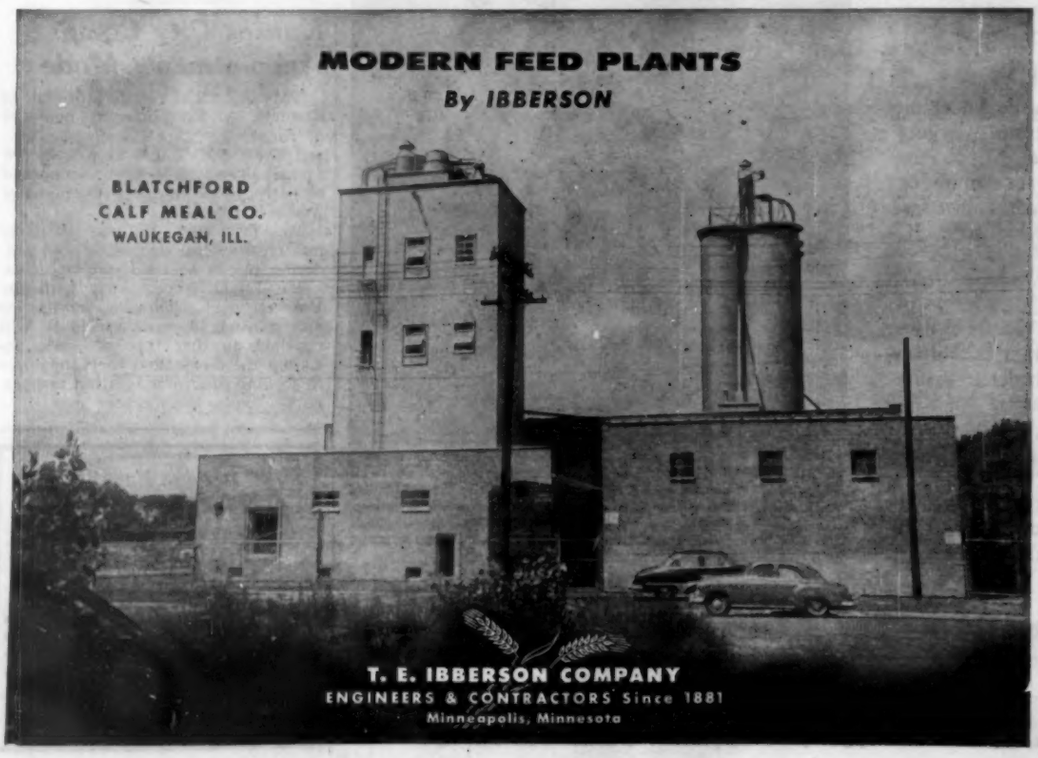

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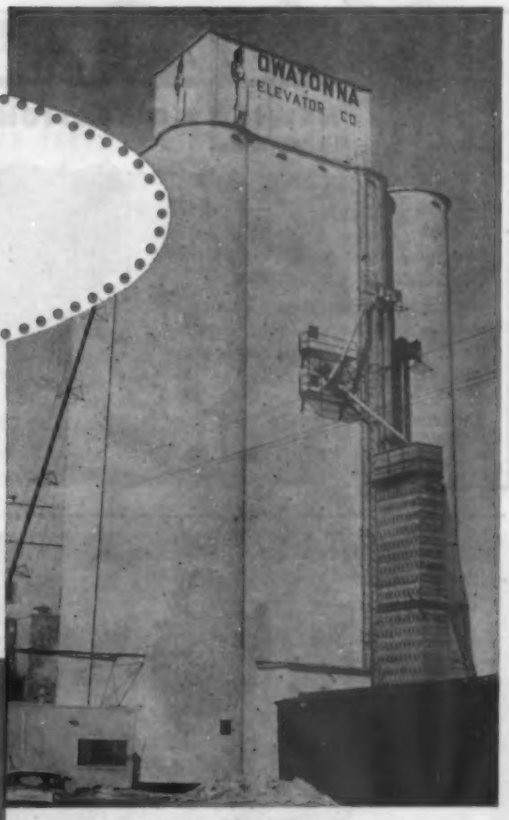

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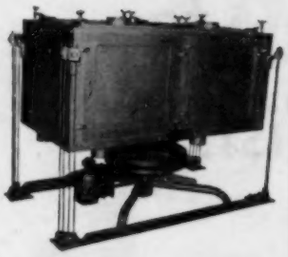

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ammonia production in the rumen liquor when fed at the maintenance level of protein equivalent. We need to remember that microorganisms need nutrients if they are going to function properly to utilize non-protein nitrogen, he said.

SWINE DISEASES—Dr. Embert Coles, department of veterinary pathology, Kansas State University, discussed "Troublesome Swine Diseases."

Dr. Coles stated that digestive disturbances appear to be the most troublesome for swine producers. He mentioned that dysentery, which is commonly called black or bloody scours, is one of the most troublesome digestive diseases of swine. This disease is caused by a bacterial organism. Dr. Coles stated that animals may recover, but may remain a carrier. Use of large quantities of antibiotics may help control, but are not a definite cure. Arsenicals also have been used for treatment.

A second troublesome disease discussed was transmissible gastro enteritis, commonly called TGE. Dr. Coles stated this disease is caused by a virus. He explained that it is characterized by vomiting and a watery, white diarrhea. Unfortunately no reliable treatment has been found, he said, but it is hoped a vaccine will be developed.

Necrotic enteritis, a disease characterized by blood in the intestinal tract and ulcers in the digestive tract, was a third troublesome swine disease discussed by the Kansas State veterinarian. Dr. Coles is of the opinion this disease might arise from a secondary infection following a nutritional deficiency of vitamin A. Furthermore, presence of antibiotics in the digestive tract may reduce the bacteria present and, in turn, more molds or fungi are permitted to develop. Microscopic studies show the presence of a fungus or mold in the stomach wall ulcers.

A fourth disease discussed by Dr. Coles was leptospirosis. This disease is caused by a bacterium (bacteria-like organism). It is an insidious type disease; that is, it may be present and yet one hardly knows it is present. If it occurs in pregnant sows, it will usually produce abortion—this being the primary lesion and sign that appears in swine. One can retain the brood sows and the next litter will be okay. Leptospirosis localizes in the kidneys and, as a result, every time urine is passed microorganisms will be passed from the diseased animal for a period up to six months to a year. The disease may be helped by use of high level of antibiotic.

Atrophic rhinitis was another of the troublesome swine diseases discussed by the veterinarian. He pointed out that one should isolate the infected hogs. The use of high level antibiotics will help to get the hogs to market. It is felt that secondary infections such as pneumonia and other respiratory diseases are what cause the more serious trouble and losses.

Dr. Coles concluded by saying that adequate nutrition and good management will go a long way to help prevent loss from troublesome diseases.

JOINT MANAGEMENT—A different but outstanding feature of the conference was the devoting of one half day to a discussion of joint management.

Prof. W. G. Amstein, state leader, Kansas State agricultural specialist, explained "Extension Projects With Formula Feed Manufacturers."

He pointed out the need for transferring of available new information concerning formula feed development and processing for use in the field.

The program has been planned in three phases:

Phase one, "Inventory of Research," is currently being conducted. This involves an inventory of research results available, cliental processing feeds and problems that need to be investigated.

Phase two, "Developing and Testing Procedure," involves developing a pilot program, methods and procedures to be printed, contract and tentative program advisory (techniques and material).

Phase three, "Training State Extension Personnel Developed by the Contract."

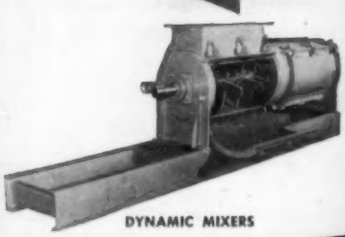
Prof. Amstein expressed that it was the desire that such a program would result in more profit from feed through better management practices.

"More Profits From Feed Through Better Management Practices" was the title of the afternoon's panel discussion.

Dr. Harold E. Jones, director of extension, Kansas State, discussed "How We Developed the Joint Management Program." Dr. Jones stated, "Development of the joint management program by the formula feed industry and Kansas State University has been possible only because these two groups have come to know and

DUPLEX MIXERS

. . . feature exclusive double-whip beater action from patented loop-type paddles. For wet or dry ingredients.



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Want highest capacity output and automated operation . . . at lowest cost per ton? This combination of the Eureka Standard Heavy-Duty Horizontal Mixer with Surge Bin is unequalled.

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. . . offer wide flexibility. Capacities from ½ to 4 tons or more per batch.

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. . . on these outstanding Eureka mixers. Use this handy coupon — or write, wire or phone if you prefer. You'll get prompt, personal attention to any request.

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Hy-Line® LAYERS: First in 6 of 12

RANDOM SAMPLE TESTS ENDING IN 1959

55¢ MORE INCOME PER BIRD

Average income advantage (over feed and chick cost) against 9 next largest-selling layers

Your first reason for choosing one brand of layer over another is extra income over feed and chick cost. Check the chart at right. Hy-Line 934 Series layers averaged 55¢ more income over feed and chick cost than the 9 next largest-selling birds . . . based on 21 official Random Sample Tests ending during the past two years.

Higher price per case: Part of the reason for the 55¢ extra income from Hy-Line layers is that they laid good-quality eggs . . . a high percentage of large and extra-large eggs with smooth, pure white shells and good interior quality. The official test figures show that eggs from Hy-Line 934 Series birds actually averaged 31¢ more per case than eggs from the 9 next largest-selling layers. Not only did they produce higher-value eggs, Hy-Line 934 Series layers also averaged 16.8 more eggs per bird.

The chart tells only part of the story, because the Hy-Line 934 Series birds available this year have an even higher performance potential than those that won 6 of 12 Random Sample Tests ending in 1959. It's another good reason why your feed customers with Hy-Line 934 Series layers will stand a better chance of making bigger profits.

Average income advantage per bird (over feed and chick cost) for Hy-Line 934 Series layers over each of the 9 next largest-selling layers

(computed from 21 Random Sample Tests ending in 1958 and 1959).

$ .29	more income than Brand B
.27	more income than Brand C
.66	more income than Brand D
.44	more income than Brand E
1.14	more income than Brand F
.69	more income than Brand G
.51	more income than Brand H
.40	more income than Brand I
.56	more income than Brand J

55¢ more income than the average of the 9 next largest-selling layers.

Hy-Line® PRECISION GENETICS

Hy-Line Precision Genetics uses inbreeding, hybridizing, and poultry blood-typing to develop Hy-Line layers that are outstanding for production, livability, feed efficiency, and large, good-quality eggs.

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TAKE OUT DUST...PUT IN PROFITS!

Just Drop the Bale—
Shred Alfalfa FAST!

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BALE SHREDDER

Now! Shred alfalfa bales automatically with the Winsted Roto-Matic Bale Shredder. Shreds even the most compacted bales into just-right size . . . blows shredded alfalfa into your mill in controlled amounts.

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- Fast . . . up to 6 tons per hour.
- Boosts your business, gives added customer service.
- Quick, simple installation. No "down" time.
- Reliable—made by the originators of bale shredding equipment.

Today, show extra profits . . . boost feed sales with alfalfa shredding service. It's a real money maker!

WRITE now for free catalog and complete information.

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AND 44 OTHER FEEDS

GIVE YOUR FERTILIZER CUSTOMERS WHAT They WANT

. . . A GUARANTEED EVEN, ACCURATE SPREAD — FULL WIDTH, NO SKIPS

SPREAD IS CHECKED THE FULL WIDTH BY ACTUAL WEIGHT

The Simonsen spreader is not an adaptation of a lime spreader. It is designed to spread high analysis fertilizers accurately and evenly, down to 75 lbs. per acre. Superb performance results in positive customer satisfaction, and unequalled maintenance-free operation. Leasing plans available.

GET THE TROUBLE-FREE FEATURES YOU WANT

- Non-Corroding stainless steel at all critical points—apron, metering gate and guides, take-up bolts, drive chains.
- All-weather wheel drive assembly.
- Hydraulic fan drive.
- Outside compartment door hinges.
- Simple adjustment for spreading rate.
- Rubber shock absorbers on hoods.

WRITE, WIRE OR PHONE COLLECT for further information about the R710, plus a full line of other Simonsen bulk fertilizer bodies and the new Simonsen Feedilizer (a dual-purpose bulk feed and bulk fertilizer body).

SIMONSEN ALSO MAKES A FULL LINE OF BULK FEED BODIES, COMBINATION BULK FEED AND SACK BODIES, AND UNLOADERS TO FIT YOUR PRESENT TRUCK BODY.

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SIMONSEN MANUFACTURING CO.
DEPT. FS QUIMBY, IOWA PHONE 72

respect each other's interest in the user of formula feeds."

At the last year's conference, it was agreed the university and feed industry have the obligation to make sure that farmer-users of formula feeds use the best recommended practices in their livestock programs. To implement this effort, a set of four folders entitled, "Management Tips on Dairy, Poultry, Beef and Swine," has been printed. Dr. Jones said, "The set contains what we have agreed are basic management recommendations for farmers in these four areas." The folders were distributed to those attending the conference and will be available from the distribution center at Umberger Hall, Kansas State University, Manhattan.

Dr. Jones summarized his comments by saying, "How we developed the joint management program" is a testimony of working relations that exist at the University and has been possible because industry and the university have come to know problems of formula feed and have strived for production of more economical food.

How to Use

"How to Use Joint Management Recommendations" was discussed for dairy cattle by Richard F. King, extension specialist in dairy husbandry; for swine, Wendell A. Moyer, extension specialist in animal husbandry; for beef cattle, Lot F. Taylor, extension specialist in animal husbandry, and for poultry by M. E. Jackson, extension poultry marketing specialist.

Prof. King referred to the 1950 decade as a period of "great transition," and the 1960's as promise of a "dynamic decade for dairying."

Prof. King gave the following reasons for the 1960's promise to be a "dynamic decade for the dairyman":

1. Less surplus—we have eaten ourselves out of the red.
2. By 1970 a 19% increase in population can be expected nationally; in Kansas, a 16-17% increase.
3. A program already in operation that will continue to promote the use of dairy products.
4. Research marches on in seeking new uses of milk and other dairy products.
5. Efficient operation still pays off.

Prof. Moyer stated that merit buying and selling of hogs will become more popular in the future. He stated that faster gains with hogs are obtained in confinement; whereas more efficient gains are obtained on pasture. The University scientist stated that it is virtually impossible to do a "poor" job of feeding today when you buy feed from a reputable manufacturer and follow his feeding and management suggestions, or mix your own rations using formula and management suggestions offered by your university and extension personnel. Generally, pigs receiving complete mixed rations gain faster, but pigs fed grain and supplement free choice show more economical gains. The extension swine specialist said that meat type hogs are fast growing, efficient and yield more than 50% of their carcass weight or 36% or more of lean cuts—hams, loin, picnics and Boston butt.

Beef Systems

Prof. Taylor pointed out having cattle doesn't solve the problems of marketing grass, roughage and grain because each individual farm presents a problem all of its own and presents widely different management practices. The extension beef specialist continued by saying there are more variables and degrees of variability in the selection of a sound beef system than in most other enterprises. It's not easy to choose the right beef system. One must take into account the operator, size of the farm, amount of grass, location of the farm and many other things. The recommended beef systems in Kansas are (1) cow herd, (2) deferred full feeding, (3) wintering, (4) wintering and grazing and (5) full feeding grain.

Prof. Jackson stated that the final and most important phase of the livestock program is "marketing" of the product. The poultry extension specialist pointed out that, "Programs that are developed with the idea of selling more products to the farmer must be accompanied with a program to sell more farm produce to Mrs. Consumer." Many times the production program grows faster than the selling program.

Prof. Jackson said feed companies must strive to help farm operators improve their operating efficiencies. Representatives must be trained to direct customers in the most efficient operation possible to obtain. As the problems involved in marketing are solved and we produce the qualities and quantities of products that are acceptable to Mrs. Consumer, the agricultural industry will prosper and expand. Production and marketing must be developed together for the success of the agricultural industry.

"Joint Management in Action" was discussed by Lloyd Larson, executive vice president, Midwest Feed Manufacturers Assn., Kansas City. Mr. Larson said, "This is a momentous occasion when university scientists and industry get together to tell the farmers the same story at the same time as to how to be better managers, better feeders, more successful producers, and thus, how to make more money." The secret of getting a job done is "getting people together." Mr. Larson concluded his comments by saying, "We must work together to get this modern story told and by all working together we can serve the farmer better."

PELLETED RATIONS—Prof. Carl Menzies, Kansas State department of animal husbandry, discussed "Pelleting Rations for Sheep." Increasing palatability, feed consumption and feed efficiency are advantages of the use of pelleted feeds for sheep. Kansas State research investigators have obtained increased rate of gain by feeding pelleted rations, he said.

Prof. Menzies reported the optimum ratio of roughage to concentrate in non-pelleted rations appears to be 55% roughage to 45% concentrate; whereas, in pelleted rations more roughage can be utilized and a ratio of 70% roughage to 30% concentrate (grain) gave optimum results for feeder lambs.

He said that pelleted rations in the Kansas sheep program show more, or at least as much, promise for creep feeding lambs than for feeder lambs. By feeding late lambs a pelleted

(Turn to RESEARCH, page 92)

IOWA MILL

(Continued from page 42)

ingredient and surge tanks and provides space for some of the mill facilities, including scale hopper, pellet mill and controls, and any sacked materials. Among the pieces of equipment in the basement area are the mixer, hammermill, hay shredder, cob crusher and pellet cooler.

The driveway, for truck receiving of bulk ingredients and loading out of finished feed, is 14 by 40 ft. and is located under the bulk load-out tanks.

The materials handling set-up includes three elevator legs and three turn-heads, with all handling and distribution remotely controlled from the work floor. All distribution and handling above the mill are accomplished by gravity, resulting in lower costs, greater compactness and less maintenance expense, Mr. Staley noted. Also, it was pointed out that there is maximum flexibility in movement of material from one point to another within the operation, or in loading out. (See accompanying diagram for the flow.)

Since the new plant was put into operation several months ago, Mr. Staley already has made a considerable amount of complete-ration pellets for the 4,500 sheep he is feeding himself. He is now producing pellets for sale to other lamb feeders.

Pellet Composition

Pellets made in the new mill at Rowan contain (per ton): 625 lb. corn, 200 lb. linseed oil meal, 15 lb. salt, 15 lb. dicalcium phosphate, 2 lb. Aurofac 10, 1 lb. vitamin A and one fourth pound vitamin D. Remainder of the mix (about 1,150 lb.) is equally divided between corn cobs or oat hulls and alfalfa hay.

Before Mr. Staley started feeding his lambs a pelleted ration, he had them on corn and hay. And at that time it took 90 days of feeding to get his lambs ready for market. Now he can feed them out in as little time as five weeks.

He started his first group of 3,600 lambs on pellets Sept. 1. They averaged 73 lb. when placed on feed and averaged 97 lb. when sold 45 days later. The top lambs in the group reached market weight in 36 days. Rate of gain for those top lambs was ⅝ lb. per day. The entire group averaged near half a pound of gain per day on an average feed consumption of 3½ lb. per day.

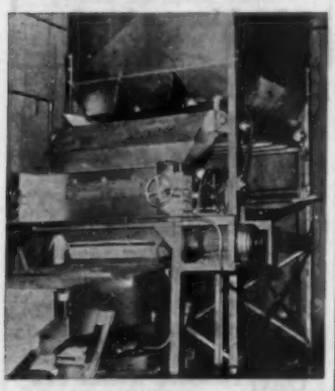
Mr. Staley uses a bulk truck to deliver pellets to his lamb lots. The loaded truck is driven into the lot or alongside the lot fence line and the feed is augered into the feeders.

Rather than providing a conventional grain bank service where grain is stored for farmers, Mr. Staley buys grain and then sells it back to feeders in the form of complete feed. Some observers feel that there will be more of this type of operation.

Bulk ingredients are received by hopper car, box car or truck. A Strong-Scott hydraulic truck hoist in the driveway area is used to unload trucks. The materials are conveyed to the 2,500-bu.-per-hour receiving leg, elevated and dropped through distributors into the grain tanks, bulk ingredient tanks or load-out tanks. The overhead bins are welded steel tanks with 60° offset hoppers.

The four field-welded steel grain tanks are 18 ft. in diameter and 50 ft. high and have hopper bottoms. Grain to be ground is moved by screw conveyor to the receiving leg and then elevated and directed into bins above the hammermill.

In addition to the other receiving facilities, there is an ear corn and hay receiving pit at one corner of the mill. Hay or ear corn to be processed is dumped into this pit. Then the hay goes into a Miller hay chopper in the basement area. From here it is blown directly into the 100 h.p. ADM hammermill in the basement. Ear corn goes through a Nickle



PELLET COOLER—Here is the new ADM pellet cooler in the Staley Farm Supply feed plant at Rowan, Iowa. Also shown is the Strong-Scott crumblizer and grading unit.

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With M-N-C you have an ideal balance of amino acids that make protein function with maximum effectiveness. It is the perfect, low-cost source for the essential amino acids. M-N-C's smooth, even texture assures uniform high quality, color and distribution in mixed feeds.

Put more sell in your feeds with M-N-C's Whey Factor Bonus. Write—or wire—for complete information today.

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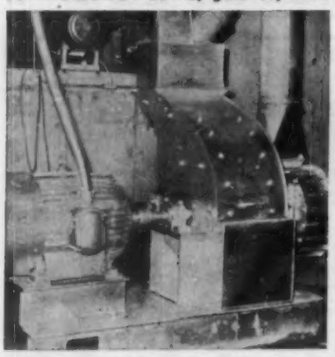
DIVISION OF DAIRIES, INC.

32 PLANTS *Coast to Coast*



HAMMERMILL—The 100 h.p. ADM hammermill is shown in the foreground here. A hay chopper is on the shelf in the background. Chopped hay is blown from the chopper unit directly into the hammermill.

crusher and then is moved by 9-in. screw conveyor into the hammermill.

The hay is ground over a ¼ in. screen and then is blown into a live-bottom bin which is in the cluster of eight ingredient tanks. The ground hay, it is noted, moves out easily from this bin, which has four 9 in. screw conveyors to form the live bottom.

The ear corn is blown into one of the other ingredient bins above the batching scale hopper. Grinding capacity ranges from 6 (hay) to 12 (corn) tons per hour.

Batching is handled with a manual push-button system and screw feeders to move the material from the overhead bins into the 5,000-lb. hopper scale. A panel board for the batching and mixing operation is just adjacent to the pellet mill. The ingredients are measured by visual observation of the scale dial. If any special micro-ingredients not in bulk are to be in a formula, they may be added directly into the mixer.

Each batch from the scale hopper is dropped into a Strong-Scott 2-ton horizontal batch mixer in the basement. Currently the mixed feed goes directly from the mixer to the mash leg, but provision has been made so that a surge bin under the mixer may be added later if desired. After being elevated, the mixed feed can go into either one or two pellet mill bins, or the bulk load-out bins, or can be loaded out directly through a spout on the side of the mill.

Pellets are made on a 100 h.p. Sprout-Waldron pellet mill and then go into a vertical cooler newly designed by the ADM equipment department. The cooler is 6 by 6 ft. and has 9 openings in the bottom. It has a 2½-ton holding capacity.

The cooled pellets are moved by drag conveyor from the cooler into a Strong-Scott crumble roll if crumbles are to be made.

After passing over a Strong-Scott shaker, the pelleted material is elevated with a 20-ton-per-hour leg and passed through a distributor for discharge into any of the 10 load-out bins above the driveway or discharged directly into trucks.

The pellet mill boiler is in a masonry block building adjacent to the mill, and beneath this is an underground 8,000-gal. concrete tank for molasses storage. The molasses is pumped to a 300-gal. heated holding tank in the basement. Molasses is added in the pellet mill at levels up to 10% or small amounts also may be added to feed in the batch mixer.

Expansion Provisions

Provision was made in the design and construction so that a second pellet mill and cooler and elevator leg could easily be added. The boiler already has the capacity for this expansion. Thus, the entire output of the plant could be pelleted.

Storage space also could be added without difficulty, it was pointed out. For example, additional grain storage tanks could be erected alongside the railroad track. Also, additional overhead bins and mill floor space could be added, and material could still move by gravity into the bins. The receiving leg is 100 ft. high, assuring ready distribution by gravity.

Much of the finished feed is expected to be handled through the bulk load-out tanks, but, in custom mixing, it also is possible to load out directly from the mash leg through a spout on the side of the mill.

For bulk delivery, Staley Farm Supply has two Pamco units, one with a 12-ft. box and one with a 14-ft. box.

The whole set-up, said Mr. Staley, provides for maximum versatility in production and handling, while still keeping labor requirements at a minimum.

For the Staley firm, the new mill represents an important expansion. It's a major addition to the operation of a seed cleaning business, grain storage facilities, sacked feed handling and operation of 1,500 acres of farm land.

Plans Feedlot at Rowan

Now that the new feed plant at Rowan is operating, Mr. Staley is thinking of buying 20 acres of land near Rowan where he expects to consolidate his lambs—now in three feedlots—in one feedlot. He also has plans for establishing a commercial cattle feedlot and hog feeding setup on the same site near Rowan.

According to present plans, Mr. Staley would feed out cattle owned by farmers or other investors. Lots would be big enough for a total of 1,500 head.

His proposed hog feeding facilities would be large enough to handle 1,000 head at a time. Mr. Staley would own these hogs—feeder pigs bought from various sources.

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THE IMPORTANCE OF VITAMIN D NUTRITION

In this educational series to farmers and feeders, Dr. G. C. Wallis answers important questions about Vitamin D Nutrition.

Dr. Wallis answers your questions about...

vitamin D nutrition

q: Is there a new recommendation for the amount of vitamin D to be fed for preventing milk fever?

a: Yes, on the basis of recent work, the Ohio Agricultural Experiment Station now recommends 20,000,000 units of vitamin D_3 per day for five to seven days before freshening. This is two-thirds of the previous recommendation. Now milk fever prevention costs even less than before.

q: Can I depend upon good sun-cured hay to supply enough vitamin D for my livestock?

a: Definitely not. Contrary to what is often assumed, the amount of sunshine received in curing does not provide a reliable basis for judging vitamin D content. Some sun-cured hay is even lower in vitamin D than artificially dried hay.

q: I have a herd of good producing dairy cows. How much vitamin D do they need?

a: Experimental evidence on vitamin D requirements is limited to work for less than a year on five or six cows in moderate to low milk production. Obviously, this is not enough to give reliable information for high-level performance on a long time basis. Based on accumulating evidence on vitamin D needs, more feed manufacturers are increasing fortification of complete dairy rations to 4,000 - 8,000 units of vitamin D per pound. As an example, when fed at the rate of 10 pounds per day, a cow would get 40,000 - 80,000 units of vitamin D daily.

q: My brood sows are getting a lot of sun-cured alfalfa hay. Will that take care of their vitamin D needs?

a: Not necessarily. One-third of twelve sun-cured alfalfa hay samples included in a recent report would have contributed less than 60 units per pound of complete brood sow ration when used at a level of 25% and the lowest one only 20 units. The highest one of the twelve samples would have contributed far less than the 500 units per pound recommended by many nutrition authorities. (Send for free reprint "The Vitamin D Content of Roughages").

q: Will it do any good to put vitamin D into beef cattle rations?

a: Very little controlled research has been done, but benefits from supplemental vitamin D have been observed in college and commercial beef herds for growing, fattening, and breeding stock. Realizing that unrecognized losses may frequently occur, many feed manufacturers fortify beef cattle rations with vitamin D.

A. C. Wallis

Send your questions about vitamin D nutrition to Dr. G. C. Wallis, Director of Nutrition, Agricultural Department, Standard Brands Incorporated, 625 Madison Avenue, New York 22, N. Y.

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Today's feeds have added nutritional fortification to assure proper levels of important nutrients required for good production.

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Formulate your feeds with FIDY Irradiated Dry Yeast—for reliable Vitamin D fortification.

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Research provides new ideas on:

- **The older cow and sustained high production.**
- **The prevention of milk fever.**
- **The improvement in absorption and utilization of calcium and phosphorous.**
- **The variability of vitamin D from natural resources.**
- **The availability of calcium reserves in older cattle.**

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For your complimentary copy, Address: Standard Brands Incorporated, Dept. FS-61, Agricultural Department, 625 Madison Avenue, New York 22, New York.

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WINNER—Among the top winners who received television sets in the American Cyanamid Co. national headline contest for the feed industry was Paul J. Zwoyer (center), sales and service manager, Beck's Feed & Grain Co., Kutztown, Pa. Making the presentation on behalf of the agricultural division are Cyanamid's sales representatives, Mort M. McDonald (left) and Walter W. Cook (right).

Cyanamid Headline Winners Announced

NEW YORK — Winners of the American Cyanamid Co.'s national headline contest for the feed industry have been announced. More than 1,200 feed dealers participated in the contest.

Among the top winners who received television sets was Paul J. Zwoyer, sales and service manager, Beck's Feed & Grain Co., Kutztown, Pa. Mr. Zwoyer and other winners qualified for awards by writing a headline for a cartoon which included the word Aureomycin.

The nine other feed dealers who submitted winning headlines were: Peter K. Reinero, Winton, Cal.; Mrs. Norman Markuson, Worland, Wyo.; Oscar Levy, Bay Shore, N.Y.; Oakville Feed & Hardware Co., St. Louis, Mo.; Charles H. Johnson, Humboldt, Neb.; Joseph J. Wetsch, Killdeer, N.D.; Robert C. Graham, Jr., Washington, Ind.; Mrs. D. Lacy Fields, Climax, N.C., and Robert G. Dawson, Lafayette, Ind.

Ad Campaign Set for Friskies Pet Foods

LOS ANGELES—A coast-to-coast campaign of local television spots and a series of full-page, color advertisements in Life magazine highlight advertising support for Friskies pet foods in 1960, it was announced by Lawrence Aldenhoevel, general advertising manager for Friskies division of Carnation Co.

"This is one of the greatest ad campaigns in Friskies history. Major effort will be put behind our dry products and canned dog food," he said. The advertising schedule includes a television campaign that covers markets accounting for 80% of all retail food sales, an extensive series of full pages in Life's national editions plus an additional 16 full pages in western editions of Life, and a full schedule in outdoor and dog publications and specialized market publications, he added.

Other media to be utilized during the year include Outdoor Life, American Field, Dog World, Popular Dogs, Journal of the American Veterinary Medicine Association, Post Exchange, Military Market and Quartermaster Review.

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Largest Dealers in Southwest
MID-CONTINENT GRAIN CO.
Board of Trade Victor 2-4671
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Wisconsin Grants

MADISON, WIS.—Grants and gifts recently accepted by the University of Wisconsin Board of Regents include:

E. I. du Pont de Nemours & Co., Wilmington, Del.—$600 for research on a new compound related to antibiotics which may have value in nutrition of young chickens, department of poultry husbandry.

Nutrition Foundation, Inc., New York—$7,000 for industrial research project on amino acid balance in nutrition, department of biochemistry.

F. H. Peavey & Co., Minneapolis—$300 for F. H. Peavey & Co.-King Midas Mills undergraduate scholarship, for student majoring in animal husbandry or agronomy.

Hardy Salt Co., St. Louis, Mo.—$1,200 for industrial research project on stock salt as a carrier of phenothiazine, department of veterinary science.

carloads a day!
That's the record-breaking amount of feeds produced and sold by Ultra-Lifed independent feed manufacturers this year. ¶Here's one reason why: only Ultra-Life takes that vital EXTRA STEP — helping you to make and SELL better feeds. Why not GET GOIN' this season . . .write, wire or phone now!
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Lemanco
for grains • ingredients
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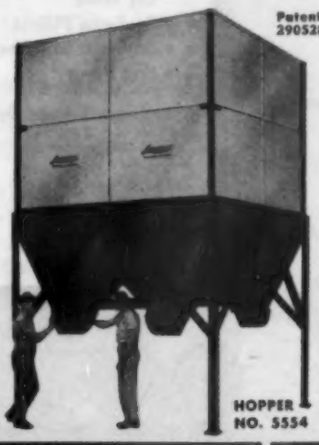
CAN BUILD EXTRA CAPACITY FROM 20 TO 94 TONS
At 40 Pounds Per Cubic Foot

The Lemanco system of prefabricating steel BULK STORAGE BINS for inside or outside use is sufficiently flexible that custom planned storage can be offered at mass production prices and delivery. Modular design permits shipment by truck to all points.

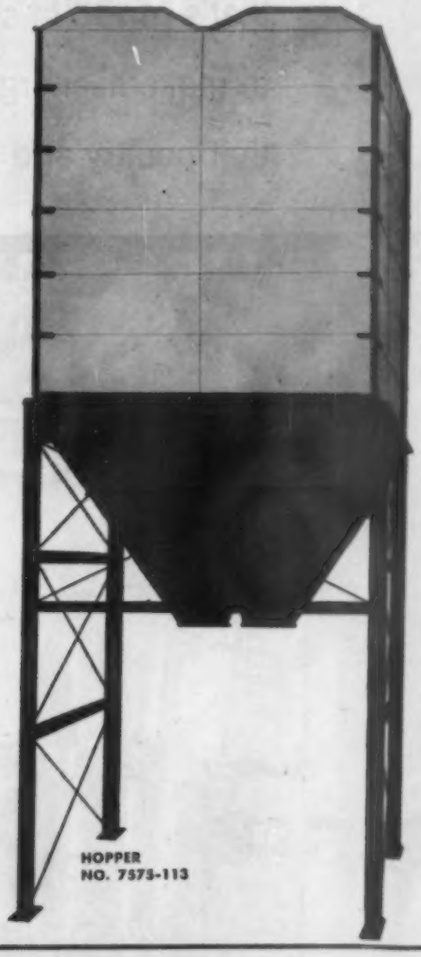
The solidly welded base and the Lemanco patented corner holding the side sheets in tension introduces a new concept in the construction of feed storage facilities. Shown are two examples of bin clusters with capacities of 20 tons and 94 tons. These bin clusters are formed by using four hoppers with common wall partition giving four storage compartments.

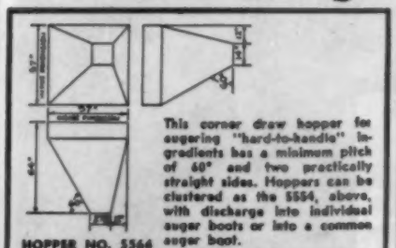
Lemanco bins are designed for inside or outside storage with models available for side draw or corner draw. This construction permits joining in a straight line as well as shown.

When inquiring about these bins be sure to specify if pneumatic delivery will be used.

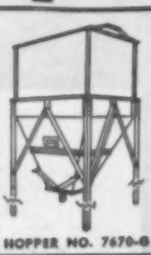


HOPPER NO. 5554


HOPPER NO. 7575-113


This corner draw hopper for augering "hard-to-handle" ingredients has a minimum pitch of 60° and two practically straight sides. Hoppers can be clustered as the 5554, above, with discharge into individual auger boots or into a common auger boot.
HOPPER NO. 5564

This general purpose side-draw bin for use with auger or weigh boggy has a capacity of 5¾ tons and a maximum capacity of 8¾ tons with another tier of sides. The bin can be used inside as well as outside. Inverted rotary gates, as shown, permit partitioning. Other type gates also available. The minimum 60° pitch of this hopper makes it useful for many applications. It can also be clustered.
HOPPER NO. 7670-A


HOPPER NO. 7670-B

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A Report Preparatory to Choosing Of ANRC Vitamin E Standards

By Dr. W. J. Pudelkiewicz
Department of Poultry Science
University of Connecticut

EDITOR'S NOTE: This is another in a series of papers from the 1959 meeting of the Animal Nutrition Research Council. The program included discussions of the relative biopotencies of various forms of vitamin E, and the accompanying article is one of the papers presented. The meeting program dealt with the ANRC's technical projects committee and its program. Papers on standards and diets for vitamin K research have appeared in previous issues of Feedstuffs, and other material on vitamin E and vitamin A will appear in subsequent issues.

Since this is a preliminary report on vitamin E, it will deal primarily with work that has been carried on at the University of Connecticut for the past several years and will cover three topics. The first concerns our thoughts on standards as sell as a little work we have done on them. The second covers methods in light of the recent discoveries of tocopherol-like substances in plant and animal tissues and will include some evidence in support of our method for determining tocopherol in them. The third concerns our chick bioassay and its use in determining the biopotencies of natural and synthetic tocopherols and their esters. This also will include a part of our work on the chemical and chick bioassay of the tocopherol content of alfalfa.

Some of the desirable properties of an acceptable ANRC vitamin E standard have already been given. Several possible standards as we see them are: dl,a-tocopherol, dl,a-tocopherol beadlets, dl,a-tocopheryl acetate, dl,a-tocopheryl acetate beadlets, d,a-tocopherol, d,a-tocopheryl acetate and d,a-tocopheryl acid succinate. The dl forms, of course, being the synthetic and the d being obtained from natural materials.

To meet our criteria in choosing a standard, dl,a-tocopherol, dl,a-tocopherol beadlets and d,a-tocopherol, being in the unesterified or free form, can be eliminated because of their instability. All the rest are quite stable. Two of the esters, namely, dl,a-tocopheryl acetate which is used in the present International Standard, and d,a-tocopheryl acetate are, in our opinion, objectionable only because they are oils, therefore not too convenient to handle.

We feel that the products of choice are dl,a-tocopheryl acetate beadlets or d,a-tocopheryl acid succinate. Both are stable dry products at room temperature, therefore, easily weighed and handled. Tocopherol in both forms is reported to be readily obtained and in a pure form. The succinate is a pure ester while the beadlets are a mixture of gelatin, sugar and dl,a-tocopheryl acetate and can be manufactured in various potencies.

Uniformity of Product

Because of our unfamiliarity with the process of manufacture of the beadlets, we were interested in checking the uniformity of this product. A sample of dl,a-tocopherol was screened to give beadlets of 60 to 80 mesh. The free tocopherol was used for analysis because of the ease of its assay. We had approximately 1 lb. of these beadlets and prior to each of 12 samples of 10 mg. each that were determined, the beadlets were well mixed. The average of 12 analyses was 24.7 mcg. of tocopherol per gram of beadlets with a standard error of the mean of .50. The beadlets thus appear to be quite uniform in composition, variations being attributed to experimental error. A disadvantage of the succinate is that in preliminary work performed by Miss Dicks this summer, it was found to be not as active biologically in the chick as in the rat.

Within the past few years, a compound has been isolated from most of the higher plant and animal tissues which was called ubiquinone by European workers and coenzyme Q by American workers. It is a quinone with a polyisoprenoid side chain. The most common structure was found to have 10 isoprenoid units in the side chain and was called coenzyme Q_{10}. One of these isoprenoid units contains 5 carbon atoms and a double bond, therefore, coenzyme Q_{10} would have 10 of these 5-carbon units. Lower homologs down to coenzyme Q_6 with 6 isoprenoid units have been isolated mostly from bacteria.

Since coenzyme Q_{10}, the form studied in our laboratory, is a quinone it can be readily reduced, and if in the reduced state it would undoubtedly react with the $FeCl_3$—bipyridine reagents and produce the same color reaction as the tocopherols. Realizing that it would probably be extracted by the conventional extraction meth-

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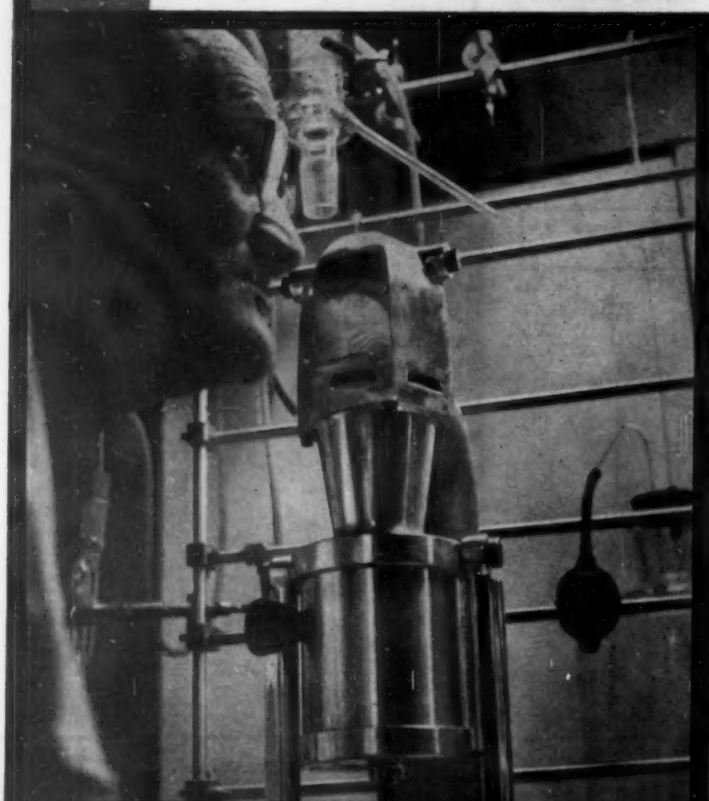

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ods used in the determination of tocopherol, we became concerned as to its possible interference in determinations of vitamin E.

Three Processes Studied

Three of the processes that we use in the determination of tocopherol and which were mentioned by Miss Dicks, namely, molecular distillation, chromatography through Florex XXS and hydrogenation, were studied as to their role in either contributing to or eliminating interference caused by coenzyme Q_{30}. The first two of these are used in the determination of tocopherol in tissue; the latter is used primarily in the determination of tocopherol in blood plasma when interfering carotenoid pigments are present, although hydrogenation is being used as a step in the determination of tocopherol in tissue.

Some of our work on coenzyme Q_{30}, which will soon be published in the Journal of Biological Chemistry, has shown that reduction will take place by a hydrogenation step as well as by chromatography through Florex when the Florex is pretreated with $SnCl_2$ and HCl. In the reduced form it interferes by reacting with $FeCl_3$ and thus will produce color with 2,2' bipyridine. We have found, however, that molecular distillation effectively eliminates interference due to coenzyme Q_{30} because liver tocopherol values of samples with and without added coenzyme Q_{30} were essentially the same, reflecting no increase in "tocopherol" value when coenzyme Q_{30} was added.

Coenzyme Q_{30} is not the only fat soluble compound that could interfere in tocopherol determinations. A quinone identified as Q_{30} and associated with the chloroplasts of all higher plants has recently been isolated. Chemically and biochemically it acts like coenzyme Q_{30} but has different absorption spectra. A compound isolated from tobacco leaves last year had an aromatic nucleus that resembled gamma tocopherol and had the polyisoprenoid side chain of coenzyme Q_9. Another compound recently isolated from kidney and liver tissue has a structure very similar to the one just mentioned, and which, in all probability, would react like tocopherol and cause interference.

Preliminary Work

It should be kept in mind that what was reported in this section was only preliminary work. What is eventually required is a thorough examination of all available methods, and, subsequently, choosing the proper method for the material to be analyzed, preferably one not employing an uncommon piece of equipment like the molecular still.

The first bioassay for vitamin E that was run in the department was when tocopherol was used to prevent encephalomalacia in the chick. It was found that the d form of tocopherol was a little more effective than the dl but no degree of effectiveness was applied to it. Then, by using d,a-tocopheryl acetate as a standard, it was found that the tocopherol of wheat middlings appeared to be fully available to the chick, that is, in preventing encephalomalacia, but the tocopherol of alfalfa was not. In fact, the tocopherol of alfalfa was reported to be only approximately one fourth available.

By the use of improved chemical methods which became available about this time for the determination of tocopherol in feeds and animal tissues, it was found that the function of tocopherol content of liver on dose was linear. By taking the slope of such a line and relating it to the slope produced by another line, a standard tocopherol for example, and provided that equimolar amounts of tocopherol were fed, various tocopherols or sources of tocopherol could be placed on a relative basis by means of ratios.

Availability of Tocopherol

This form of bioassay was applied to check again on the availability of the tocopherol of alfalfa and was found repeatedly to be approximately one third available. When we first reported that the vitamin E from alfalfa was poorly utilized, it was suggested that our chemical analysis for determining tocopherol was in error. This is possible when one considers the fact that a commercial grade of alfalfa meal has been shown to con-

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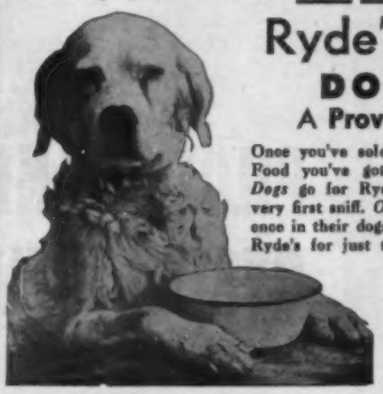

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BELGIAN VISITORS—American business communications interest Julien Debaillie, feed manufacturer, and A. Dequeker, professor at the University of Louvain, Belgium. The two look over publications with Frank Honegger (left), and Sam Honegger (right). This was the fifth Belgian delegation to call on Honeggers' & Co., Fairbury and Forrest, Ill., during recent months.

tain, besides vitamins E and K, considerable amounts of Q_{254}, approximately 100 mcg. per gram of dry alfalfa, and 10 mcg. of coenzyme Q_{10} per gram of alfalfa. All four of these compounds in the reduced state react with the $FeCl_3$—bipyridine reagents.

If the value which we obtained for total tocopherol by chemical analysis was made up partly of vitamin E and partly of these other substances, it is conceivable to see why we only obtained one third utilization. Data that is presently being prepared for publication, however, shows that our chemical method for the determination of tocopherol in alfalfa compares quite favorably with a chick bioassay.

Our next project was to compare the relative potencies of natural vs. synthetic and free vs. esterified a-tocopherol, in an attempt to see if results in the chick were comparable to those of the rat. The chick appears to utilize the natural form equally as well as the rat when dl,a-tocopheryl acetate is used as the standard, however the chick utilizes the free form of either the natural or synthetic form of tocopherol equally as well as the respective natural or synthetic acetate ester, contrary to what has been reported with the rat.

Our preliminary work with d,a-tocopheryl acid succinate shows it to have less activity than an equimolar amount of dl,a-tocopheryl acetate or a ratio of less than one. Rat cell hemolysis assays have shown it to be approximately 14% more active than the dl,a-tocopheryl acetate while in rat pregnancy assays, it was found to be equivalent to d,a-tocopheryl acetate or 1.36 times more active than the synthetic dl,a-tocopheryl acetate.

In summary, we believe that: (1) the ANRC vitamin E standard should be a beadlet made up of an esterified tocopherol; the form of tocopherol, concentration and the mesh to be decided at a later date; (2) a desirable method for analysis of tocopherol in feed and tissue is still to be worked out; (3) the rat pregnancy bioassay has been well established; however, hemolysis of red cells with dialuric acid and a chick bioassay, measuring tocopherol content of liver require additional work, and (4) on the basis of our studies with the chick bioassay, it was felt that it is a simple precise method with a very good possibility of improving on its precision and shortening the experimental period.

FORMER FEED MAN DIES

WAUTOMA, WIS. — Arthur J. Walker, 82, operator of the Walker Mill & Feed Service here for many years until his retirement 12 years ago, died recently after a long illness.

"I was a 9-oz. weakling until my boss fed me **CFS Concentrate #3"***

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University tests prove that CFS Concentrate #3 stimulates rapid growth at a cost considerably under most other sources of UGF (unidentified growth factors). In controlled experiments broilers, turkeys and swine gained weight faster with CFS #3's formula of Condensed Fermented Corn Extractives dried on selected by-products from the corn wet milling industry. It is free-flowing, and handles well in bulk shipments. Test and formula data available on request. Try CFS Concentrate #3 today.

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In 1960, an educational advertising campaign will explain Hygromix feeds. Here's why this extra effort will be expended during a year of low hog prices.

Many farm-marketing experts predict hog prices will remain low during most of 1960. Now is the time to present growers with facts that can help them get the most profit possible from depressed markets. Many farmers are reluctant to invest their money in commercial feeds during thinner markets. On the other hand, evidence shows that sound feeding programs produce more profit during these times. Hygromix worm control plays an important role in good management. What better time, then, to carefully explain these facts and reasons to hog raisers? The purpose of this new advertising effort is to show why swine worms are a drain on good management, how feeds with Hygromix work to control this problem and improve profits even in a low market.

In future ads, this informative series will deal with the various phases of the swine worm problem, and how feeds with Hygromix help solve this problem. From the life cycles of the worms to just *how* Hygromix kills worms and prevents swine worm reproduction, the facts will be explained fully in a simple, straightforward manner.

Growers who fully understand the economic losses caused by swine worms—both in terms of intestinal damage and poorer feed efficiency—will realize more than ever the importance of your feeds with Hygromix. We hope that you, too, will find this new series helpful in explaining to your customers the advantages of sound feeding and worm control.

LOOK FOR THIS NEW HYGROMIX EDUCATIONAL SERIES IN THESE LEADING AGRICULTURAL PUBLICATIONS:

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Milwaukee Asks Rail Rate Cut

MILWAUKEE—"A major dispute which may determine Milwaukee's future as a worldwide grain shipping port is in the making over railroad rates on grain shipments," Harry C. Brockel, Milwaukee port director, said here Jan. 16.

Mr. Brockel said Milwaukee will be seeking lower railroad rates against railroads and allied interests "which now ship grain through southern and eastern ports at favorable rates." He said, "This port has long lacked low rates from midwestern grain producing areas," and noted that "ports like Chicago and Duluth-Superior have been enjoying favorable rates and heavy grain traffic."

Both the Northwestern and Milwaukee Road rail systems recently published new tariffs to equalize grain rates from producing areas to Milwaukee, Mr. Brockel said.

Allied Opponents

He said that allied with southwestern railroads in opposing the rates are Houston, Texas; New Orleans, La.; Lake Charles, La.; Peoria, Ill.; Kansas City, Mo., and other inland and Gulf ports which want to preserve the advantage the southwestern railroads now hold.

Working with the Milwaukee port authorities for lower rail rates are the Milwaukee Grain Exchange, the Association of Commerce, the Milwaukee Overseas Steamship Agents Assn., and the General Steamship Co., Mr. Brockel said.

"The big 'rate war' in the making will probably take years of maneuvering and negotiating before the Great Lakes ports develop a rate structure sound enough to meet the demands of the St. Lawrence Seaway," he asserted.

Mr. Brockel said it was only fair that Milwaukee be given equal rates with other cities in order to test the port's grain shipping potential.

Another view on grain shipping through this port was given in a letter to Mr. Brockel by Gerald M. Mitchell, branch manager here for Cargill, Inc.

Mr. Mitchell noted that "Wisconsin does not drain an adjacent grain area, as Duluth-Superior is a natural outlet for Montana and Dakota grain producers and the Mississippi River and Gulf ports are convenient for midwestern growing areas." In addition, he said, Wisconsin, over the years, has become less important as a grain producing state, and tends now to be a grain deficient area.

However, citing the possibility that favorable railroad rates may bring export grain to Milwaukee, Mr. Mitchell said, "We are prepared and we are anxious to undertake any export business through the port that can be done."

FASHIONS AT CONVENTION—Latest styles will be modeled for ladies attending the Midwest Feed Manufacturers Assn. convention Feb. 7-9 in Kansas City. Shown modeling is Mrs. David Larson, daughter-in-law of Lloyd Larson, executive vice president of the association. The fashion show will be part of a ladies' brunch Feb. 8.

Wirthmore Manager

WALTHAM, MASS.—Thomas C. Sweetser has been named to manage all Wirthmore distribution facilities in Fairfield, Maine, including the Wirthmore store, bulk station and bulk maintenance garage there, it was recently announced by R. D. Emmons, general sales manager for the company.

Prior to his appointment, Mr. Sweetser served as assistant division sales manager for eastern New England. In his new position, he will be assisted by W. H. Ramsey, L. A. Moran and L. W. York, who will continue their respective sales-service activities in the area. Mr. Sweetser, a former resident of Dover, N.H., will make his new home in Waterville, Maine.

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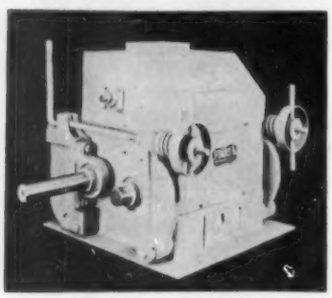
No. 7783—Guaranteed Roller Mill

A roller mill which has its rolls guaranteed for 10 years has been announced by Myers-Sherman Co. The unit carries a two year over-all guarantee on all parts in addition to the 10 years on the solid chilled cast iron rolls. All rolls are corrugated to individual needs and specifications.



They can be furnished to crack corn to any degree of coarseness, to grind small grains, to crimp, flake or roll all small grains. All finished feed is processed to uniform particle size, the company says, with a minimum of dust or fines. The mill is available in a number of sizes and models with capacities from 800 to 40,000 lb. an hour. For details, check No. 7783 on the coupon and mail.

No. 7786—Loading Bulletin

Magline Inc., is offering an engineering bulletin which details the development and expansion of the company's line of mobile loading ramps into an integrated system of ground level loading for plant-wide shipping and receiving. Described is the firm's Mobil-Dock system and the mobile loading ramp. Typical problems illustrated in the bulletin include: ground level plants, plants with limited dock facilities, scattered buildings with one central dock area, production line "purchase parts" feeding, away-from-plant operations such as railcar loading and other conditions. For copies of the bulletin, check No. 7786 on the coupon and mail.

No. 7781—Screener Catalog

A Rotex Screener Catalog, Bulletin 905, is available from the Orville Simpson Co. The 32-page catalog contains detailed information on Rotex Screeners and their various applications in the industry. A feature of the publication is a Comparative Opening Reference Table for Silk, Nylon and Wire Screen Cloth. For copies of the publication, check No. 7781 on the coupon and mail.

No. 7784—Dehydration Equipment

Advanced feedstuffs drying machinery has been announced by Edw. Renneburg & Sons Co. Included in the new equipment is the Renneburg "DehydrO-Mat" dryer, or combination dryer-cooler, and the "Refractoryless" gas-fired air heating furnace. The large and variable diameter of the DehydrO-Mat regulates air flow and controls material velocities; safe drying temperature; longer product retention time; assures gentle handling and drying for heat-sensitive products such as soybean meal, feedstuffs, foods, chemicals and other materials, the company says. It is possible, company literature says, through increased volumetric heat transfer, to dry as much product in a 35 ft. long DehydrO-Mat as is usually dried in a 50 ft. or 60 ft. dryer. Coupled with the unit is the company's refractoriless double shell, air-cooled steel combustion chamber which eliminates the need for insulation and refractories. Complete information can be obtained by checking No. 7784 on the coupon and mailing to this publication.

No. 7785—Bulk Handling Report

Case histories illustrating advances in the handling of bulk materials by adaptation of pneumatic equipment are included in an eight-page technical report available from Fuller Co. Cases cited concern installations for unloading wood flour from railway cars and moving it through storage and in process and for transfer of alumina from rolling stock to seagoing vessels. Other installations described handle bread flour, mixed feed, barley, wheat shorts, dehydrated alfalfa and others. Nineteen photos are included. For copies, check No. 7785 on the coupon and mail.

No. 7782—Dry Dog Food

Valley Mills introduces a dry dog food formulated to meet the nutritional requirements of hunting and hard-working dogs. Called "Val-E-Pep," the product is packed in 10 lb., 25 lb. and 50 lb. units. The bag is printed in yellow, brown and black on a semi-bleached sheet, with a hunting scene illustrated. Feeding directions, analysis and ingredients are printed on the side panel of the bag. For more information, check No. 7782 on the coupon and mail.

Also Available

The following new products have been described in previous issues of Feedstuffs and information about them may still be obtained by jotting the appropriate number of the coupon and forwarding it to Feedstuffs.

No. 7745—New package size, Hess & Clark.

No. 7746—Wire egg baskets, Tobias Enterprises

No. 7747—Electronic sensing control, Security Controls, Inc.

No. 7748—Weighing systems, Richardson Scale Co.

No. 7749—Box car loader, Stephens-Adamson Manufacturing Co.

No. 7750—Brochure on automation, Prater Pulverizer Co.

No. 7751—Flat belt conveyor, Richardson Scale Co.

No. 7752—Mobile egg unit, L. A. Pockman Manufacturing Co.

No. 7753—Udder sponge display, Sparta Brush Co.

No. 7754—Silage preservative, Taste Engineering, Inc.

No. 7755—Packaged premix line, Thompson-Hayward Chemical Co.

No. 7756—Poultry marketing calculator, Sterwin Chemicals, Inc.

No. 7757—Liquid feed movie, U.S. Industrial Chemicals Co.

No. 7758—Hopper car unloader, Ripco Air Systems.

No. 7761—Mobile feed mill, Barnard & Leas Manufacturing Co., Inc.

No. 7762—Long-term leasing plan, Myers-Sherman Co.

No. 7764—Mixing, weighing unit, Duplex Mill & Manufacturing Co.

No. 7759—Piperazine product, Rhodia, Inc.

No. 7760—Hay shredding device, Daffin Manufacturing Co.

No. 7763—High energy milk replacer, Western Condensing Co.

No. 7765—Conversion table, St. Regis Paper Co.

No. 7766—Chemical dehorning product, Hess & Clark.

No. 7767—Automatic pelleting, Sprout, Waldron & Co.

No. 7768—Air lock feeder, Young Machinery Co., Inc.

No. 7769—Conveyor belting, Russell Manufacturing Co.

No. 7770—Suspended trough waterer, H. D. Hudson Manufacturing Co.

No. 7771—Gravity conveyor, Rapids-Standard Co.

No. 7772—Portable pelletizer, Dodgen Industries.

No. 7773—Loader and Piler, Stephens-Adamson Manufacturing Co.

No. 7774—Round chick fount, National Ideal Co.

No. 7775—Calf formula promotion, National Vitamin Products Co.

No. 7776—Bovitrin promotion, Merck & Co., Inc.

No. 7777—Picking machine, Gainesville Machine Co., Inc.

No. 7778—New Terramycin package, Chas. Pfizer & Co., Inc.

No. 7779—Vitamin K assay method, Heterochemical Corp.

No. 7780—Feed mill planning, Myers-Sherman Co.

Grain Featured First Day of Ohio Meeting

TOLEDO, OHIO—The opening day program of the 1960 convention of the Ohio Grain & Feed Dealers Assn., Inc., is centered around subjects of interest to the grain trade and its operations, according to an announcement by Vincent Kahle, Luckey, Ohio, program chairman. The convention will be held at the Commodore Perry Hotel here Feb. 21-23.

Two addresses will highlight the morning session Monday, Feb. 22. J. C. Frankenfeld, director, agricultural division of Arwell, Inc., Waukegan, Ill., will speak on "Protecting Stored Grain Means $," followed by two speakers sharing the rostrum in "Washington Outlook vs. Texas Insight." Speaking will be Madison Clement, president of the association, Waco, Texas, and Alvin E. Oliver, executive vice president of the group, Washington, D.C.

Political leaders of Ohio will speak at the luncheon, talking on "The Political Scene in an Election Year."

Two college leaders will be featured during the afternoon sessions. Dr. Roy M. Kottman, the newly-appointed dean of agriculture at Ohio State University, will give an address entitled, "Our Challenge." Dr. Nicholas Nyardi, Bradley University, Peoria, Ill., will follow with an inspirational talk, "Free Enterprise or Disaster."

Send me information on the items marked:

- ☐ No. 7781—Screener Catalog
- ☐ No. 7782—Dry Dog Food
- ☐ No. 7783—Guaranteed Roller Mill
- ☐ No. 7784—Dehydration Equipment
- ☐ No. 7785—Bulk Handling Report
- ☐ No. 7786—Loading Bulletin

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Clarence Rowland, Jr.

Clarence Rowland, Jr., Reelected Chairman Of Chicago Board

CHICAGO — Clarence Rowland, Jr., was reelected as chairman of the board, the Chicago Board of Trade, without opposition Jan. 18. Mr. Rowland is a partner with the firm of Engel & Co. and has been a member of the exchange since 1941.

Also elected without opposition were James P. Reichmann, independent broker, to serve as vice chairman, and William G. Catron, Jr., B. A. Eckhart Milling Co., as second vice chairman. Mr. Reichmann has been a member of the Chicago Board of Trade since 1926. Mr. Catron has been a member since 1948.

Of the seven candidates nominated for the five three-year vacancies on the board of directors the following were elected: John L. Georgas, General Mills, Inc.; William D. Fleming, vice president of Walston & Co.; Alfred H. Gruetzmacher, independent trader; Gardiner B. Van Ness, with the firm of Thomson & McKinnon, and Ben Raskin, president of Rice Grain Corp. Maynard F. Gamber, a partner in the firm of M. F. Gamber, was elected to fill a one-year term as director.

Named to the nominating committee were Adam J. Riffel, partner in A. J. Riffel & Co., and William E. Cassellman, assistant secretary of the Ralston Purina Co.

Belgians See Honegger Feed, Poultry Facilities

FAIRBURY, ILL.—Sixteen Belgian feed manufacturing executives recently saw how Honeggers' & Co., Inc., produces Honegger layers on its feeds.

They were guests of the St. Regis Paper Company multiwall bag division; St. Regis Bates, of Tubize, and American Cyanamid Co., on a tour of feed, poultry and livestock installations in the East and Midwest.

Honeggers' was their host here in cooperation with St. Regis on the midwest portion of the tour that started in Chicago, including dinner at the Stock Yards Inn.

The Belgians saw at Honeggers' the hens and breeder stock which had produced winning entries in three recent egg-laying contests held in Belgium.

The tour at Honeggers' included the company's 600-acre poultry and livestock feed research farm that serves 17 states, the poultry breeding stock research center that serves 300 associated hatcheries on three continents, plus the firm's electronically controlled Fairbury feed mill.

Sam and Frank Honegger, and E. F. Dickey, president, greeted the visitors. Preceding the Fairbury tour, they saw a film of the firm's integrated facilities that include three feed mills, feeder equipment plant and prefabricated farm building manufacturing plant.

William Harris, of the St. Regis multiwall Chicago office, and Gerald Clark, product development department, New York City, represented St. Regis on the midwest leg of the tour.

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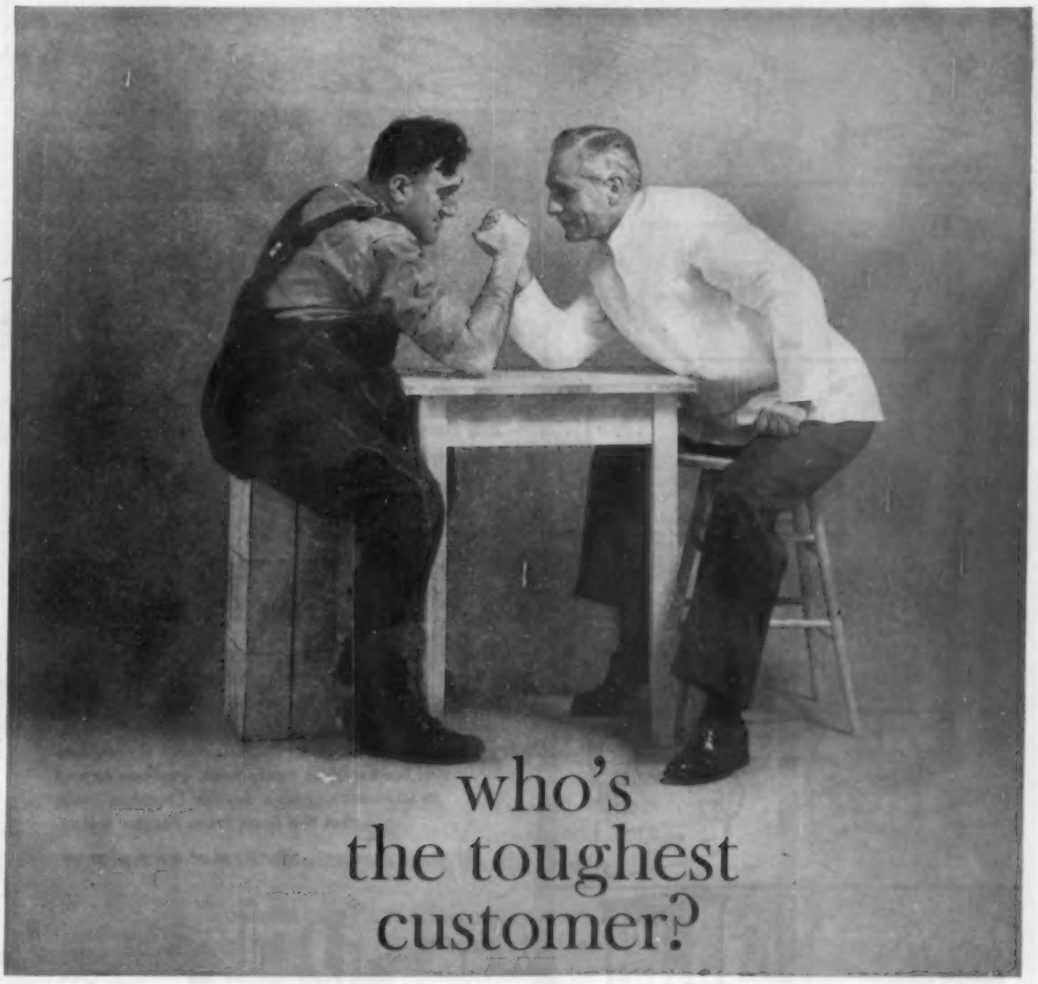

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Working in the world's most complete salt research laboratory, with the most modern scientific equipment, Morton chemists thoroughly test and evaluate every farm and ranch product carrying the famous Morton name.

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Convention Calendar

Feb. 2-3 — Agricultural Industries Forum; University of Illinois, College of Agriculture, Urbana; Department of Agricultural Economics, 805 Mumford Hall.

Feb. 2-3 — Hoosier Turkey Trot; Spring Mill State Park., Mitchell, Ind.; Indiana State Poultry Assn.; Inc., Department of Agricultural Extension, Purdue University, Lafayette, Ind.

New Listings

For the convenience of readers who scan the Convention Calendar regularly for new listings, those added to the column in the current week appear separately from ones which have been entered previously. The following week they will be moved to their proper slot where they will remain until the event is held.

Feb. 22 — New Mexico Feeders' Day; New Mexico State University, State College; chm., Dr. John H. Knox, Animal Husbandry Dept., University Park, N.M.

Feb. 3-4—Illinois Feed and Nutrition Conference; University of Illinois, Urbana; chm., K. E. Harshbarger, 315 Animal Sciences Laboratory.

Feb. 3-5 — American Dehydrators Assn.; Broadmoor Hotel, Colorado Springs; exec. vice pres., Joseph Chrisman, 430 Board of Trade Bldg., Kansas City 5, Mo.

Feb. 4-5—Oregon Animal Industry Conference; Oregon State College, Corvallis, Ore.; chm., Dr. J. E. Parker, Poultry Husbandry Department.

Feb. 4-5—New Hampshire Poultry Health Conference; University of New Hampshire, Durham; Richard Warren, Poultry Department.

Feb. 4-5—Utah Feed Manufacturers & Dealers Assn.; Annual Meeting and Nutrition Conference; Utah State University, Logan; sec., Lawrence Morris, Brigham Young University, Provo, Utah.

Feb. 5—Ohio Broiler and Market Egg School; Ohio State University, West Campus, Columbus.

Feb. 8-9—Montana Nutrition Conference; Montana State College, Bozeman; chm., Dr. O. O. Thomas, Animal Industry Dept.

Feb. 8-9—Midwest Feed Manufacturers Assn.; Muehlebach Hotel, Kansas City; exec. vice pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

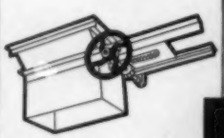
Feb. 8-11—Illinois Cattle Feeder Days; University of Illinois, Dixon Springs Experiment Station, Robbs; H. A. Cate.

Feb. 10-11—Pacific Northwest Feed Mill Production School; Chinook Hotel, Yakima, Wash.; sponsored by Washington State Feed Assn.; mgr., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 11—Boston Grain and Flour Exchange Annual Banquet; Sheraton-Plaza Hotel, Boston; chm., Paul Sutliff, 177 Milk St., Boston, Mass.

Feb. 12 — Washington State Feed Assn.; Chinook Hotel, Yakima, Wash.; annual convention; mgr., John

1 Distributor


8 Rack & Pinion

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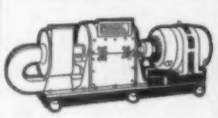
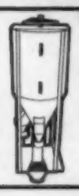

2 Hammer Mill


9 Vertical Batch Mixer

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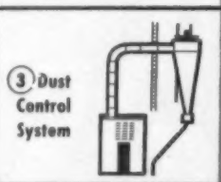
3 Dust Control System

10 Weigh Buggy

FORSTER DESIGNS & BUILDS COMPLETE FEED MILLS

4 Receiving Leg & Dump

11 Molasses Blender

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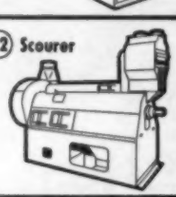
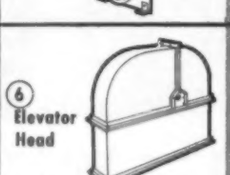
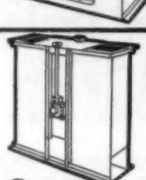
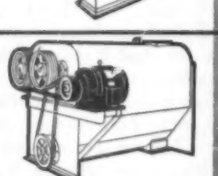
5 Feed Dresser


12 Scourer

At your service—We fly our own planes


6 Elevator Head


13 Elevator Boot


7 Mixer & Dresser

14 Bulk Car Loader

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☐ Molasses Blender ☐ Scourer ☐ Bulk Car Loader
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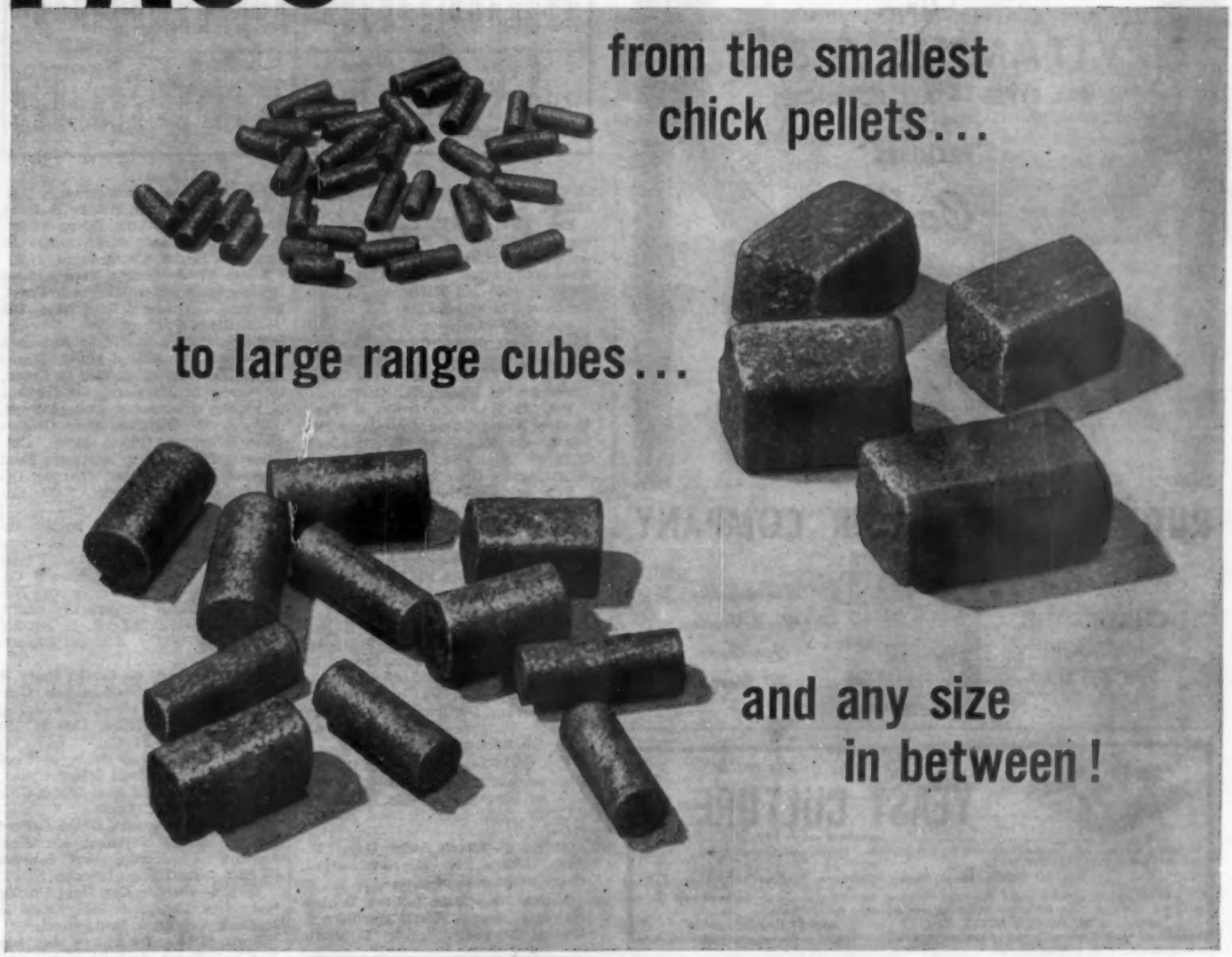

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G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 12-14—Fact Finding Conference, sponsored by the Institute of American Poultry Industries; Municipal Auditorium, Kansas City, Mo.; pres., Harold M. Williams, 59 East Madison, Chicago, Ill.

Feb. 18—Minnesota Sheep and Lamb Day; West Central Experiment Station, Morris, Minn.; Dr. R. M. Jordan, Animal Husbandry Dept., University of Minnesota, St. Paul.

Feb. 21-23 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., George G. Greenleaf, 5625 N. High St., P. O. Box 121, Worthington, Ohio.

Feb. 22-25 — Colorado Livestock Days; Colorado State University, Fort Collins; chm., Paul S. Pattengale, Extension Animal Husbandman.

Feb. 22-25—Mississippi Swine Short Course; Mississippi State University, State College; Dean and Director, Division of Agriculture.

Feb. 23-24—Virginia Feed & Nutrition Conference; Hotel Roanoke, Roanoke; J. Paul Williams, sec., Virginia State Feed Assn., 615 E. Franklin St., Richmond, Va., or Prof. Paul M. Reaves, Department of Dairy Science, Virginia Polytechnic Institute, Blacksburg, Va.

Feb. 25-26—South Carolina Poultry Disease and Management Short Course; Clemson College, Clemson, S.C.; Dr. B. D. Barnett, head, Poultry Dept.

March 3—Illinois Swine Day; Uninois, Urbana; K. E. Harshbarger, Dairy Science Dept.

March 7-8—Grain & Feed Dealers National Assn.; Hotel Muehlebach, Kansas City; sec., Herbert L. Sharp, 400 Folger Bldg., Washington 5, D.C.

March 9—Mutual Millers & Feed Dealers Assn.; Statler-Hilton Hotel, Buffalo, N.Y.; sec., Mrs. Donald E. Mattison, Box 8, Cattaraugus, N.Y.

March 17-18—Oregon Feed & Seed Dealers Assn.; New Sheraton Hotel, Portland, Ore.; mgr., Russ Hays, 702 Lewis Bldg., Portland, Ore.

March 17-18 — Maryland Nutrition Conference; Shoreham Hotel, Washington, D.C.; chm., Richard D. Creek, University of Maryland, Department of Poultry Husbandry, College Park.

March 23—Distillers Feed Conference; Sheraton Gibson Hotel, Cincinnati; sponsored by Distillers Feed Research Council; exec. director, Dr. Lawrence E. Carpenter, 1232 Enquirer Bldg., Cincinnati, Ohio.

March 23-24—National Broiler Industry Conference; Dinkler-Plaza Hotel, Atlanta, Ga.; vice pres., Frank Frazier, P.O. Box 368, Richmond, Va.

March 29—New Jersey Poultry Nutrition Institute; Rutgers University, New Brunswick, N.J.; R. L. Squibb, chairman, Poultry Science Department.

March 31-April 2—Pacific Dairy & Poultry Assn. Exposition and Convention; Stardust Hotel, Las Vegas, Nev.; association office, 1304 E. 7th St., Los Angeles 21, Cal.

April 1-2 — Texas Grain & Feed Assn., Shamrock Hotel, Houston; sec., Ray B. Bowden, 407 Fort Worth Club Bldg., Ft. Worth, Texas.

April 5-7—Nebraska Grain & Feed Dealers Assn.; Pershing Municipal Auditorium, Lincoln; sec., Howard W. Elm, Trust Bldg., Lincoln, Neb.

April 6—Purdue Egg Day; Purdue University, Lafayette, Ind.; David D. Jackson, Extension Poultryman.

April 11-13 — Poultry and Egg National Board, LaSalle Hotel, Chicago, Ill.; mgr., Floyd Geil, 8 S. Michigan Ave., Chicago 13, Ill.

April 17-19—Animal Health Institute; Shoreham Hotel, Washington, D. C.; sec., D. L. Bruner, 512 Shops Bldg., Des Moines 9, Iowa.

April 22—Indiana Cattle Feeders Day; Purdue University, Lafayette, Ind.; chm., Dr. W. M. Beeson, Animal Science Dept.

April 21-23—California Hay, Grain & Feed Dealers Assn.; Ambassador Hotel, Los Angeles; sec., John Gilmore, Blue Anchor Bldg., 1400 10th St., Sacramento 14, Cal.

April 21-23—Kansas Grain & Feed Dealers Assn.; Broadview Hotel, Wichita, Kansas; sec., Orris E. Case, 609 Wiley Bldg., Hutchinson, Kansas.

April 22 — Nebraska Livestock Feeders Day; University of Nebraska, College of Agriculture, Lincoln; chm.,

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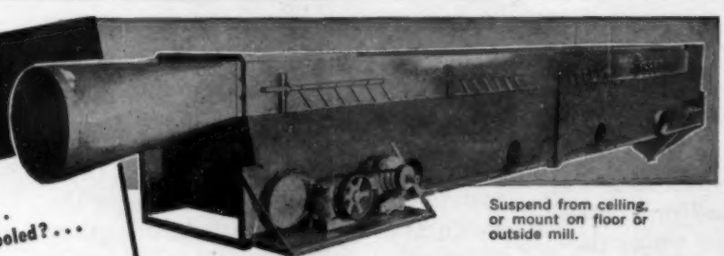

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STABILITY— normal storage conditions— 4 gm premix at average room temperature and humidity

Avg of 3 lots	% Potency Retained 30 Days	90 Days	120 Days
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Ordinary Vitamin K Premix	84%	67%	52%

STABILITY— field samples—ordinary vitamin K premix recently secured from feed mills

	% Potency Retained
Average of 7 lots	23%

(Actual potency of individual lots ranged from 0 to 45%)

STABILITY— adverse storage conditions— accelerated storage conditions 113°F at 80% relative humidity

Premix Potency	% Potency Retained after 30 Days: Old Style Premix	New Process Hetrogen K
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8	27	92
4	39	91

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1960 CATTLE FEED—Four men study the cattle feed that Minute Maid Corp. will produce in 1960 at its Auburndale, Fla., plant. They are (left to right): John M. Fox, president, Minute Maid Corp.; G. D. Bartrem, director of sales, citrus products division; Gene McKoy, past president of Florida Feed Dealers Assn., and Mallory Roberts, Jacksonville office manager, Bradley & Baker. The product was introduced to cattle feed dealers at the recent citrus products division sales conference.

Wm. J. Loeffel, Animal Husbandry Dept., Lincoln 3, Neb.

May 1-4—National Fisheries Institute; Hotel Fontainebleau, Miami Beach, Fla.; asst. gen. mgr., Mal Xavier, 1614 20th St. N.W., Washington 9, D.C.

May 9-11 — American Feed Manufacturers Assn.; Conrad Hilton Hotel, Chicago; sec., W. T. Diamond, 53 W. Jackson Blvd., Chicago 4, Ill.

May 9-11 — Association of American Feed Control Officials; Sheraton-Blackstone Hotel, Chicago; sec., Bruce Poundstone, Feed and Fertilizer Dept., Agricultural Experiment Station Bldg., University of Kentucky, Lexington.

June 12-14—Eastern Federation of Feed Merchants, Inc.; Whiteface Inn, Lake Placid, N.Y.; exec. director, Austin W. Carpenter, Sherburne, N.Y.

June 13-15 — American Association of Feed Microscopists; Hilton Hotel, San Antonio, Texas; sec., G. M. Barnhart, Missouri Department of Agriculture, Jefferson City, Mo.

June 14-15 — Alabama Poultry Industry Assn.; Municipal Auditorium (Exhibits) and Thomas Jefferson Hotel, Birmingham, Ala.; sec., W. L. Walsh, Box 567, Montgomery.

June 14-17—NEPPCO Egg Quality School; Rutgers University, New Brunswick, N.J.; Dr. A. Van Wagenen, NEPPCO, 10 Rutgers Place, Trenton 8, N.J.

June 19-21—Indiana Grain & Feed Dealers Assn.; Mid-Summer Convention; French Lick-Sheraton Hotel, French Lick; sec. Fred K. Sale, 600 Board of Trade Bldg., Indianapolis 4.

July 23-26 — Georgia Feed Assn.; General Oglethorpe Hotel, Wilmington Island, Savannah; sec., Will L. Kinard, Suite 210, 3240 Peachtree Road Bldg., Atlanta 5, Ga.

Sept. 1-6—International Congress on Nutrition; Sheraton-Park Hotel, Washington, D.C.; sponsored by International Union of Nutritional Sciences; sec., Milton O. Lee, 9650 Wisconsin Ave., Washington 14, D.C.

Sept. 14-16—National Feed Ingredients Assn.; Liggetts Holiday Inn, Burlington, Wis.; sec., Paul W. Bonewitz, 1023 Equitable Bldg., Des Moines, Iowa.

Sept. 21-23 — Feed Production School; Continental Hotel, Kansas City; sponsored by Feed Production School, Inc.; pres., Lloyd Larson, 20 W. 9th St. Bldg., Kansas City 5, Mo.

Sept. 22-23 — Arkansas Formula Feed Conference; University of Arkansas, Fayetteville; chm., Dr. E. L. Stephenson, Department of Animal Industry and Veterinary Science.

Oct. 5-7—Texas Nutrition Conference, Texas A&M College Station; chm., Dr. J. R. Couch, Department of Poultry Science.

Oct. 11-12—Virginia State Poultry Federation convention and trade show; Hotel Roanoke, Roanoke, Virginia; sec., J. Paul Williams, 615 East Franklin Street, Richmond 19.

Oct. 12-13 — Association of American Feed Control Officials Annual Meeting; Shoreham Hotel, Washington, D.C.; sec., Bruce Poundstone, Feed and Fertilizer Dept., Agricultural Experiment Station Bldg., University of Kentucky, Lexington.

Nov. 2-3—Illinois Feed Assn.-Illinois Poultry & Hatchery Federation, joint convention; Springfield Armory, Springfield; sec., IFA, Dean M. Clark, 141 W. Jackson Blvd., Chicago 4; sec., IPHF, Aubrey Harless, Shelbyville, Ill.

Nov. 16-17—Missouri Poultry Improvement Assn.; Hotel Continental, Kansas City; sec., E. M. Funk, Columbia, Missouri.

1961

Jan. 12-13—Michigan Feed & Grain Dealers Assn.; Michigan State University, Kellogg Center; sec., Nevel Pearson, P.O. Box 472, East Lansing.

Illinois Feed Dealers To Discuss Problems

CHICAGO—Two of the six Illinois districts whose feed dealers met last fall to discuss common problems have set dates for similar winter meetings.

The New Berlin area, composed of 17 counties, plans to meet Feb. 24 for supper at 6:30 p.m., in the Masonic Temple, Jacksonville, followed by a panel discussion on two subjects which the dealers had earlier chosen as of prime interest to them.

Lee Roy Jackson, Jr., Jackson Feed Mill, Jacksonville, is in charge of this event which, he says, is expected to draw a record number of dealers in this area.

The Galesburg area, which covers 14 counties, will hold its meeting in the Kewanee Hotel, Kewanee, March 8, beginning with a buffet supper at 6:30 p.m. John Bonnett of Bonnett Feed & Grain Co., Bushnell, will speak on his recent trip to Russia.

W. G. Morrow, Joy Feed Mills, Joy, is chairman of arrangements for this district meeting.

The other four districts are expected to announce the dates of their meetings very shortly.

Carl Rylander, Kauffman Feed Mill, Waterman, is acting as general chairman of all six districts.

Chicks' Magnesium Need May Be Altered

COLLEGE PARK, MD.—With the coming of high energy diets, high fat diets and the discovery of new essential elements (such as zinc, selenium, etc.) and antibiotics, the magnesium requirement for chicks could be altered considerably from what is was 10-15 years ago, University of Maryland researchers point out.

Magnesium has been shown to be essential in the diets of young rats, mature rats, dogs, rabbits, calves, pigs, ducks and chickens, they note in the Maryland Poultryman, a publication of the university extension service. However, the magnesium requirement for chicks today is based on work that was done 10-15 years ago.

1949 Estimate

The chick requirement for magnesium in 1949 was estimated to be about 400-500 ppm. It can readily be seen that this amount is very small and that most practical rations will contain adequate amounts of magnesium, researchers note. Recently, workers at Purdue have presented evidence which demonstrates that the chick requirement for magnesium is 250 ppm. Work at Maryland, when feeding chicks a Drackett-cerelose (purified) ration, indicates that the chicks' magnesium requirement is less than the original known magnesium requirement of 400-500 ppm.

Also at Maryland, in work with Beltsville White turkeys, the poult requirement for magnesium is approximately 270-320 ppm. In other work, up to 1,700 ppm. of magnesium was fed with no apparent toxic effect to young poults. Other tests with poults and chicks indicate that when an antibiotic (such as oleandomycin) is omitted from the diet, the magnesium requirement is increased.

Deficiency Symptoms

Magnesium deficiency symptoms in chicks and poults are indicated by poor rate of growth, poor feathering, forced movements and incoordination of movements which has been characterized by "goose-stepping." There is also a loss in muscle rigidity and the presence of fine tremors or spasms of body muscle. Other characteristics are sudden attacks of convulsions which appear at any time, and, in this state, the bird falls on its side with its legs fully extended and its head retracted with or without a twisting motion. If the chicks or poults do not die during this convulsion attack, they will relax in about 10-15 seconds and will remain in a state of shock for several minutes, after which they recover until another attack. Studies on brain tissue of magnesium deficient chicks reveal microscopic tissue changes.

The Maryland report said that from a practical standpoint, most plant materials, especially green leafy materials, contain magnesium because magnesium is an essential constituent of the chlorophyll molecule which is the green color material of plants.

Relatively little is known about the specific functions of magnesium in the body. However, it is known that magnesium has to be present in muscle tissue in order for muscle contraction to occur. When large amounts of magnesium salts are injected, there is marked depression of the central nervous system causing anathesis; however, this action can be neutralized by injection of calcium salts. Also, magnesium plays a role as an enzyme activator in some chemical reactions, particularly those involving energy transfers in the body, the researchers said.

TO MAKE GRAIN DRIERS

EMPORIA, KANSAS — Aeroglide Corp., Raleigh, N.C., plans to make grain driers in the roundhouse of the Sante Fe Railroad here. The company makes grain driers in 60 models.

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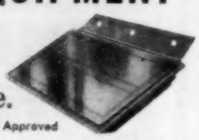

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State Egg Output Rank Changes

LINCOLN, NEB. — The changing rank of states in production of eggs per layer was noted recently at the Nebraska Poultry Improvement Assn. annual district meetings. (See accompanying table.)

Speakers noted that in 1940 Nebraska was ranked 30th and Iowa 36th. In 1958 Iowa ranked 4th and Nebraska 20th, showing a sharp increase in rate of lay in the midwestern area.

It is reasonable to assume that management capable of obtaining 216 eggs per hen is also capable of producing high quality eggs, according to the speakers.

Speakers said other reasons for the increase in rate of lay in the midwestern area are the trend toward specialization, adoption of better feed management practices and utilization of franchise leghorn type chicks which not only produce at a higher rate but also produce uniform color high-quality eggs.

Order of Rank and Eggs Produced Per Layer by States and Regions

Rank	State	1930	State	1940	State	1950	State	1958
1	Connecticut	163	Maine	185	Massachusetts	205	California	225
2	Washington	159	Massachusetts	183	Washington	203	Washington	225
3	Utah	158	Vermont	181	Vermont	202	Oregon	221
4	Massachusetts	152	N. Hampshire	177	Connecticut	202	Iowa	216
5	Nevada	152	Connecticut	175	Rh. Island	201	Connecticut	215
6	Oregon	149	New Jersey	173	Oregon	195	Rh. Island	213
7	Maine	149	Washington	171	Maine	195	Massachusetts	213
8	N. Hampshire	148	Rh. Island	170	California	192	Minnesota	212
9	New Jersey	148	Oregon	166	N. Hampshire	192	Idaho	212
10	California	145	New York	158	New York	188	New York	209
11	Arizona	144	California	156	Idaho	187	Maine	208
12	Rh. Island	141	Utah	155	Iowa	185	Indiana	208
13	New York	139	Arizona	154	New Jersey	185	Wisconsin	208
14	Pennsylvania	135	Delaware	152	Utah	184	Florida	208
15	Idaho	133	Nevada	150	Minnesota	183	Arizona	208
16	Ohio	133	Pennsylvania	149	Michigan	183	Utah	208
17	Michigan	131	Wisconsin	145	Ohio	183	Vermont	207
18	Wisconsin	129	Ohio	144	Pennsylvania	183	Pennsylvania	207
19	Vermont	128	Michigan	143	Indiana	179	Ohio	205
20	Wyoming	127	Idaho	143	Wisconsin	177	Nebraska	203
21	New Mexico	127	Maryland	142	Delaware	177	So. Dakota	202
22	Indiana	126	W. Virginia	142	Nebraska	176	Michigan	202
23	Florida	126	Indiana	141	Nevada	176	N. Hampshire	202
24	Delaware	125	Minnesota	135	Wyoming	175	Illinois	200
25	Maryland	125	Virginia	135	Montana	175	Kansas	200
26	Colorado	124	Montana	134	Arizona	174	Georgia	199
27	W. Virginia	124	Kansas	133	Kansas	173	Montana	196
28	Montana	123	Wyoming	133	Illinois	173	New Jersey	194
29	Nebraska	120	Colorado	132	Missouri	171	No. Carolina	193
30	Kansas	120	Nebraska	128	Maryland	171	Wyoming	193
31	Minnesota	117	Florida	128	Virginia	170	Colorado	191
32	Virginia	117	Missouri	127	W. Virginia	170	Virginia	189
33	Missouri	116	Illinois	127	Colorado	168	Missouri	187
34	So. Dakota	114	New Mexico	127	Florida	166	Alabama	186
35	Iowa	113	Oklahoma	125	So. Dakota	165	So. Carolina	186
36	Oklahoma	112	Iowa	123	Kentucky	163	New Mexico	186
37	Tennessee	112	Kentucky	123	New Mexico	161	Maryland	185
38	Texas	111	No. Dakota	121	Oklahoma	159	Texas	184
39	Illinois	110	Texas	120	No. Dakota	158	Delaware	184
40	Kentucky	109	So. Dakota	117	No. Carolina	155	No. Dakota	182
41	Georgia	108	No. Carolina	113	Texas	154	Oklahoma	179
42	No. Dakota	106	Tennessee	110	Tennessee	144	W. Virginia	178
43	Alabama	103	Arkansas	105	Arkansas	139	Arkansas	175
44	No. Carolina	102	Alabama	104	Georgia	139	Nevada	173
45	So. Carolina	99	So. Carolina	102	So. Carolina	139	Kentucky	170
46	Arkansas	96	Georgia	101	Alabama	135	Tennessee	166
47	Mississippi	92	Louisiana	97	Mississippi	130	Louisiana	164
48	Louisiana	86	Mississippi	91	Louisiana	129	Mississippi	163

Rank	Regions	1930	Regions	1940	Regions	1950	Regions	1958
1	Western	144	No. Atlantic	162	Western	189	Western	219
2	No. Atlantic	140	Western	154	No. Atlantic	189	W. N. Central	206
3	E. N. Central	125	E. N. Central	139	E. N. Central	179	E. N. Central	205
4	W. N. Central	116	W. N. Central	128	W. N. Central	177	No. Atlantic	205
5	So. Atlantic	114	So. Atlantic	123	So. Atlantic	158	So. Atlantic	193
6	So. Central	106	So. Central	114	So. Central	148	So. Central	176
	U. S.	121	U. S.	134	U. S.	174	U. S.	201

West Virginia Paper Reports Record Sales

NEW YORK—Record sales for the seventh successive year were established in fiscal year 1959 by West Virginia Pulp & Paper Co., according to David L. Luke, president.

Mr. Luke told stockholders in the company's annual report that net sales for the year ended Oct. 31 had advanced to $233 million from $208 million in 1958, an increase of 12%. This compares with sales of $95 million 10 years ago.

While these sales generated a profit 23% higher than that of 1958, Mr. Luke noted that earnings in 1959, in common with the paper industry as a whole, did not recover fully to levels preceding the 1957-58 business recession.

Mr. Luke attributed this situation to overcapacity in various segments of the industry which resulted in product prices that fell short of fully reflecting increases in costs, particularly the additional costs incurred to improve the quality of products.

West Virginia's net earnings from operations in 1959 amounted to $11.8 million, equal to $2.21 per share of common, compared with $9.6 million, or $1.78 per share in 1958. The company also realized an additional net gain of $11.8 million from the sale of its majority stock interest in Hinde & Dauch Paper Co. of Canada, Ltd., to St. Lawrence Corp.

FIRM INCORPORATES

RICHMOND, KY. — Robinson & Turley, Inc., has filed articles of incorporation, listing 3,100 shares, no par, to engage in business as a retail dealer in feeds, seeds and general merchandise. Incorporators are Chester G. Luxon, Robert E. Luxon and Henrietta L. Simmons.

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Quality Control Head At Wirthmore Retires

WALTHAM, MASS.—Dr. Richard O. Brooke, director of quality control for Wirthmore Feeds, Inc., Waltham, has retired. He joined the company in 1933 as chemist and designed and directed the firm's research laboratory for 25 years. The laboratory, under Dr. Brooke's direction, collaborated with the Association of Official Agricultural Chemists in an effort to improve methods of analysis as applied to feeds.

Dr. R. O. Brooke

Dr. Brooke received a B.S. degree from the University of Toronto and a M.Sc. degree from McGill University. In 1926 he joined the staff of the Agricultural Experiment Station, College Station, Texas, as assistant to the state chemist. Three years later he received a fellowship to study under Dr. Lafayette B. Mendel in the Sheffield School of Science, Yale University, and was awarded a degree of Ph.D. in biochemistry in 1932.

Dr. Brooke's main interest has been biochemistry, and after a brief vacation he intends to return to this field of research.

Oklahoma Egg Men Form State Council To Back Promotion

STILLWATER, OKLA.—Oklahoma egg producers, alarmed over slumping prices and declining consumption, have formed a state egg council to "put new life into a promotional program."

The council was formed at a meeting of egg producers, handlers, hatcherymen, feed manufacturers and dealers and representatives of the Oklahoma Poultry Improvement Assn.

The group elected officers, created a board of directors and proposed a plan to set aside funds for promoting egg consumption. Officials said the program will be submitted to the entire industry for approval.

If accepted, the system would provide for the collection of approximately one cent per case of eggs sold. The money would go into a fund to be used for promoting consumption.

Under the plan, egg handlers would be assessed ¼¢ per case; hatcherymen would pay 20¢ per 1,000 straight run chicks and 40¢ per 1,000 on sexed chicks; wholesale feed manufacturers would be taxed ⅛-⅜¢ per ton of feed; feed dealers would pay ⅜-1¼¢ per ton, and allied industries would contribute 1/50th-1/10th of 1% of their gross sales.

Sewell Skelton, extension poultry marketing specialist, told the meeting that egg consumption per capita in Oklahoma has dropped from 400 to 350 eggs per year.

Cites Similar Plans

Calling for a voluntary assessment program, he cited the results of similar plans used by the dairy industry and sheep and wool producers.

"The dairy industry, valued at $4 billion, spent $10 million last year on promoting their product," Mr. Skelton said.

"But the egg industry, valued at $2 billion, spent only $125,000 for promoting the sale and use of eggs," he reported.

Charley Williams, Cleveland, representative of the Oklahoma Poultry Assn., was elected president of the new council.

Pete James, Purcell egg producer, was named vice president; Dr. John West, head of the Oklahoma State University poultry department, was selected as secretary, and Paul Silvey, Shawnee hatcheryman, was elected treasurer.

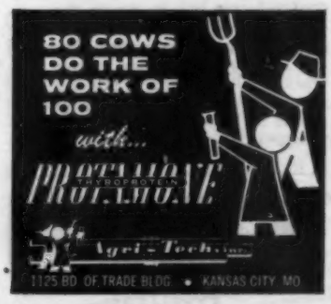
In addition to the new officers and Mr. Skelton, those attending the meeting were Dale Kern, Broken Arrow producer; Lloyd Chapman, producer, and Dugan Barnes, handler, both of El Reno; Weldon Street, Oklahoma City, representing the Oklahoma Feed Manufacturers Assn; C. J. Smith, Chickasha, feed manufacturer; Willard Russell, Tulsa, representing the Oklahoma Egg Handlers Assn.; Clay Boston, hatcheryman, representing the Oklahoma Poultry Improvement Assn.; Bill Beck, associate county agent at Wilburton; Kerb Karner, farm editor, Tulsa World, and Dr. George Abshier and Delbert Black, Oklahoma State.

Dr. Salsbury's Adds To Research Staff

CHARLES CITY, IOWA—Dr. Edward W. Berndt, Milwaukee, has joined the research staff of Dr. Salsbury's Laboratories in the organic chemistry department. He is working under the direction of Dr. A. W. Walde, head of the department.

Dr. E. W. Berndt

Dr. Berndt received his doctorate from the University of Minnesota, after several years in industry. He was graduated at the University of Wisconsin in 1951. After two years of army service in the chemical corps, he did research for two companies, one in Chicago and the other at Racine, Wis.



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Four Types of Hog Finishing Contracts in Indiana

"The amount of risk borne by either party is related to net return. The 'risk bearer' stands to make more under favorable conditions and to lose more under unfavorable conditions."

By Dr. J. H. Atkinson and J. P. Coleman
Purdue University

Four major types of hog finishing contracts were available in Indiana in 1959. All contracts were between the supplier of certain production items and the hog producer. The first three contracts discussed below contain more elements of integration than the final contract, a financing or carrying arrangement. The four types of contracts are referred to as: Financing limited management contract, "profit" share contract, unit guarantee contract and feeding contract.

An estimated 100,000 hogs, representing about 1.5% of Indiana's total, were finished and marketed under one of the first three types of contracts during the year ending July, 1959. One northern Indiana county had about 24,000 hogs under contract. This was 15.7% of the county's total hogs.

During the year July 1958-July 1959, 19 Indiana farm suppliers were studied who had contracts with an average of 10 producers each. However, by July 1959, only 17 of these suppliers were still contracting—with an average of six producers per supplier. Many of these 17 indicated they would soon discontinue contracting because of low hog prices. Others said they would continue contracting only with their best producers during the low price period of the cycle.

Twenty-eight separate contracts of the first three types had 13 variations or modifications. One supplier offered four contract variations alone. Some of these 28 contracts were soon discontinued and replaced by others deemed more satisfactory. A description of the most common contracts follows.

FINANCING-LIMITED MANAGEMENT—The most common contract of this type is an arrangement in which the supplier agrees to provide and sell feeder pigs, feed and medication to the producer and to secure the financing for these by co-signing the producer's note held by a lending institution. However, the supplier requires certain management practices of the producer and also gives recommendations which he would like the producer to follow. The supplier receives a return for his services only from profits on inputs sold to the producer.

In case the producer does not repay the loan, the supplier pays the lender the amount owed. Under the terms of the contract, the producer then becames liable to the supplier. In this event, the supplier usually chooses to put another run of hogs in the producer's hands in an effort to get him out of debt.

"PROFIT" SHARE CONTRACT—The producer and supplier in a typical share contract divide equally the "profit." The "profit" in this contract is defined as sale proceeds minus the supplier's costs (retail level) of livestock, feed, medication, interest and taxes on hogs, feed processing, veterinary, miscellaneous and overhead.

The producer provides the facilities and labor for his share of the "profit." If a loss occurs, the producer loses the cost of his facilities' use and labor, but no more. The supplier in this contract owns the pigs, provides the feed, and takes any loss coming from death, disease or poor prices.

In this type of contract, the supplier demands definite managerial practices. He also stipulates that his own feed, pigs and possibly equipment be used. His gains or losses depend on the profitability of the enterprise—aside from what he gains from the "sale" (markup) from (wholesale to retail) of feed, pigs and equipment. Consequently, even in break-even situations, he may continue to contract with producers so that he can continue to move supplies.

UNIT GUARANTEE CONTRACT—The most common unit guarantee contract was one in which the producer received 2¢ lb. of gain in weight of the hogs. The producer supplies the labor and facilities in this contract, but is assured of the same income regardless whether the supplier profits or loses. Management requirements in this type of contract are

EDITOR'S NOTE — This report on finishing hogs on contract in Indiana is taken from the economic and marketing information bulletin for Indiana farmers prepared by the agricultural staff of Purdue University. Dr. J. H. Atkinson and Jean P. Coleman are with the agricultural economics department at the university. Dr. Atkinson is an associate professor.

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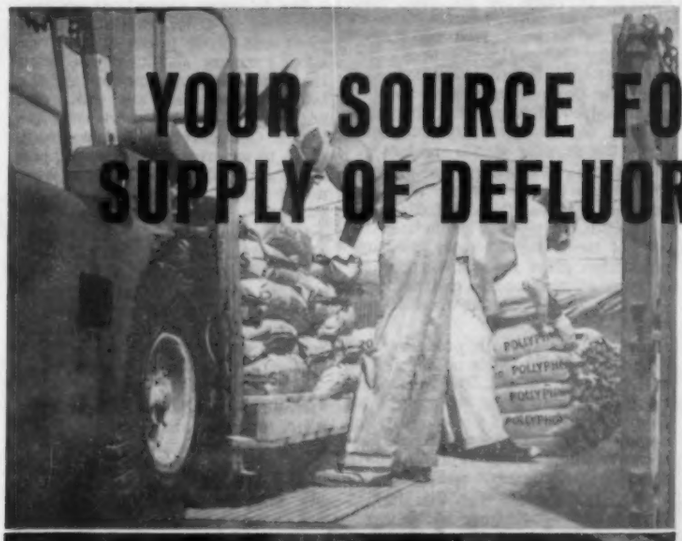

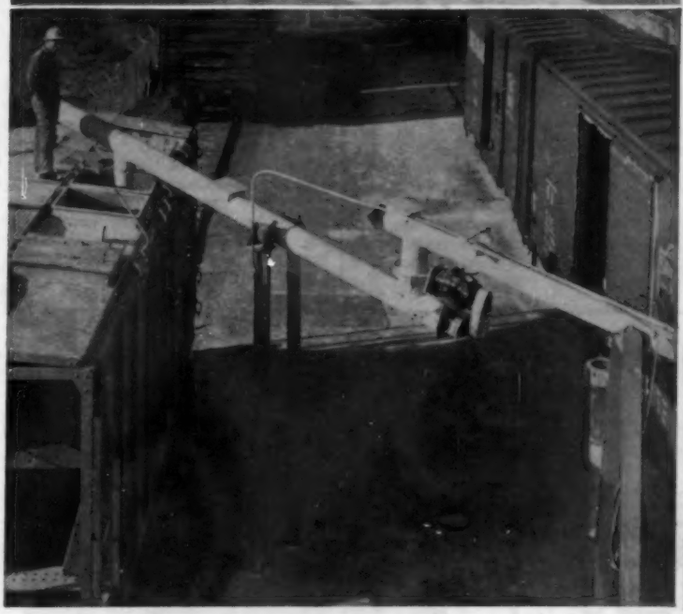

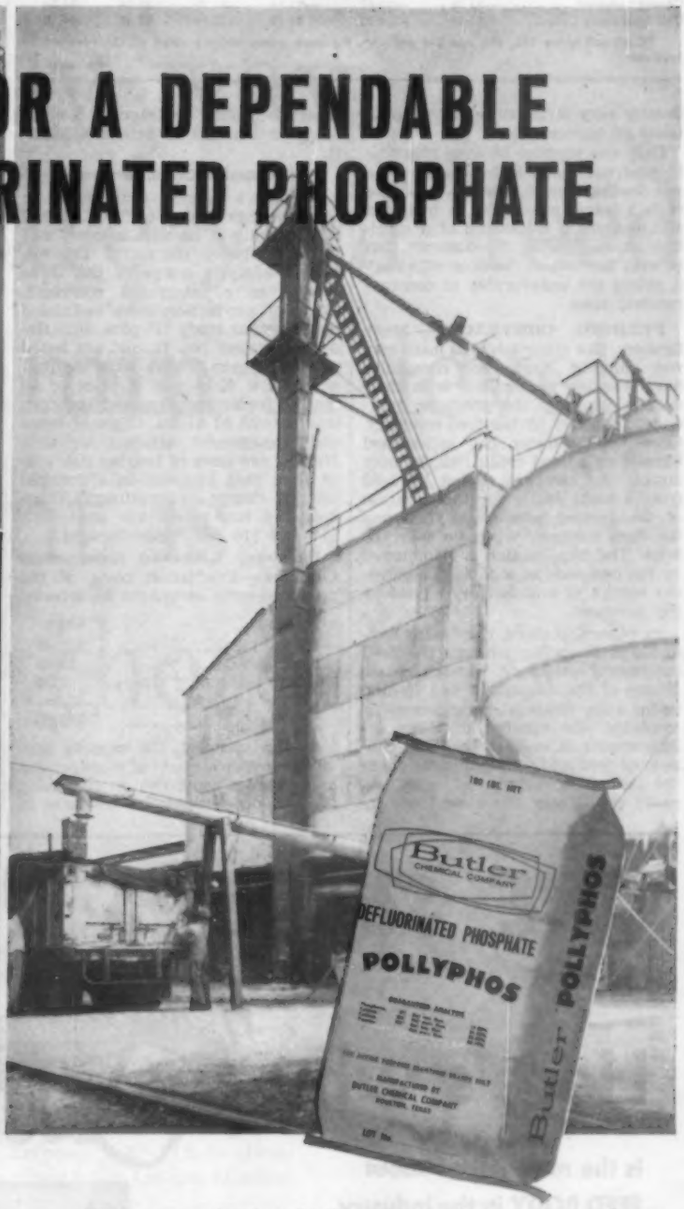

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TABLE 1. Net Returns to Producers and Suppliers in Three Typical Contracts*

Type of contract	Net Returns —$12 cwt.— Producer	Supplier	—$14 cwt.— Producer	Supplier	—$16 cwt.— Producer	Supplier
Financing-limited management	—$3.57	....	$0.63	....	$4.83	....
"Profit" shared	—$2.95	—$0.62	—$1.16	$1.79	$0.94	$3.89
Unit guarantee	$0.45	—$4.02	$0.45	$0.18	$0.45	$4.38

*Contracts using $12, $14 and $16 per cwt. for pork price. Manure value of 92c credited to producer.

usually very strict since the supplier takes all chance of loss.

Only one supplier offering this type of contract made it for longer than one feeding period. Thus, a producer with a large investment in buildings and equipment is assured of a specified income during the contract, but he may be "left at the door standing" if prices are unfavorable at contract renewal time.

FEEDING CONTRACTS — Many farmers, like other business men, borrow capital. Many feed companies have working agreements with their dealers whereby the producer is financed directly by the feed company. Once the producer has established himself as a good credit risk, he may obtain the company brand of feed from a local dealer for the duration of the feeding period and then pay the feed company when he sells the hogs. The local dealer is reimbursed by the company as soon as it receives the receipt of any delivery signed by the producer.

In other instances, the dealer handles the financing without the feed company's assistance. Though no estimate of the amount of hog feeding under such financial arrangement is available, the number of these arrangements is quite large. The concern of feed and supply dealers about the increasing volume of open account credit may stimulate more interest in feeding contracts as a more formalized means of extending credit.

Estimated Costs, Returns

Suppose a farmer is interested in feeding hogs under contract. What differences will he find in costs and returns between contracts? The following analysis compares the three typical more integrated contracts. Costs of production were estimated in a previous study (Purdue AES Research Project No. 7), and are based on 170 lb. gain of pork with the purchase of a 40-lb. pig. A price of $9 for the feeder pig was used and corn was figured at $1 bu. Costs of labor and management are not included. Neither are costs of bearing risk other than that included in a nominal interest charge on investment. Three levels of hog prices are used—$12, $14 and $16 per hundredweight.

Financing- Limited Management Contract — Production costs of the producer were estimated as follows:

Item	Cost
40 lb. pig	$ 9.00
Feed	13.45
Other (excluding labor)	7.24
Total	$29.69

In this contract, the supplier provides a minor amount of management and assumes some risk in co-signing the producer's note. No estimate of the costs was made, but they were probably relatively small.

"Profit" Share Contract—Cash outlay of the producer is reduced to $3.87. (Producer's costs include pasture, machinery use, building use, equipment use, bedding, electric power, miscellaneous and overhead.) The supplier provides the pig ($9), feed ($13.45) and other inputs (interest and taxes on hogs, feed processing, veterinary, miscellaneous and overhead), ($3.37), but these are deducted from the gross returns. Any "profit" is divided equally. In event the gross returns do not cover the supplier's costs, the supplier stands the loss.

Unit Guarantee (2¢ lb. gain)— Costs borne by the producer were the same as with the "profit share" contract. But, instead of deducting the cost of items furnished by the supplier from gross returns, the supplier bore all these costs and paid the producer 2¢ lb. of gain or $3.40 per hog.

Net returns to both producer and supplier at three levels of hog prices are shown in Table 1. The return for the producer may be thought of as payment for his labor, varying amount of management and risk. Returns to the supplier represent payment for management and risk.

Table 1 indicates that the amount of risk borne by either party is related to net return. The "risk bearer" stands to make more under favorable conditions but runs the risk of losing more when conditions are unfavorable. Conversely, when little risk is taken, both profits and losses are limited.

Estimated returns to the producer as shown in Table 1 may vary depending on facilities available on the farm. For example, if buildings are available and have no other use, the producer's returns (all contracts) might be increased by as much as the $1.44 building cost assumed in the analysis. On the other hand, if a contract called for new, elaborate facilities and buildings, these costs might be higher.

Producer's Consideration

What should be the producer's considerations before entering into any of these three types of contracts?

The following suggestions are made assuming a given level of management and given prices of feed and pigs. Farmers should check actual feed and feeder pig prices and take into consideration any differences which might be found between contracts. Consideration should also be given to superior management knowhow furnished by the supplier which might result in lower costs of production.

Financing - Limited Management— The producer should be able and willing to bear risk of loss, but be in need of operating credit and limited management guidance. These two items may be obtained from other sources, so the producer should investigate the possibilities before entering the contract.

Profit Share—The producer should want less risk and need more management. Consequently, he must expect a lower return which may be acceptable only if he has lower paying alternatives for his labor and can adapt present facilities to the contract requirements rather cheaply.

Unit Guarantee—The producer should not be able or not want to bear any risk of production. He should be content with a low but stable income. The producer in this contract received $.45 per hog for his labor regardless of the price of hogs. This may be adequate to the producer who could spend his time no more profitably. His costs are covered if his facilities are adequate to meet the contract's standards without much additional investment.

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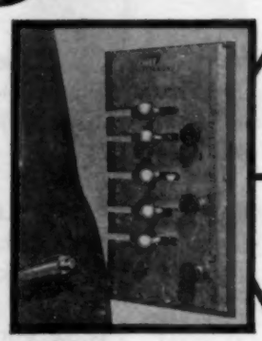

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Plans for Clemson Poultry Short Course Feb. 25-26 Reported

CLEMSON, S.C.—The annual poultry disease and management short course has been scheduled for Feb. 25-26 at Clemson College, Dr. B. D. Barnett, head of the poultry department, has announced.

The short course program is designed to bring to South Carolina poultry growers the latest developments and knowledge in management and disease control. Several well known men in the poultry field will appear on the program.

These include: Dr. Dale King, head, Auburn (Ala.) University poultry department; Dr. D. J. Richey of the University of Georgia and formerly of Clemson; Dr. J. T. Tumlin, McMillen Feed Mills, Decatur, Ind.; Dr. Till Huston of the University of Georgia; Jim Caylor, director of research of the Marbut Milling Co., Augusta, Ga.; Paul Thomas, Sumter turkey producer, and Dr. Barnett, Prof. J. B. Cooper, Dr. B. W. Bierer and Charles Risher of Clemson. Several others have been contacted by Dr. Barnett.

Dr. King will talk on "Lighting Procedures Related to Egg Production," and Mr. Caylor will discuss "The Danger of Chemical Residues on Grains."

Other tentative topics include: Coccidiosis in replacement flocks, the effects of internal parasites, poisonous weed seeds affecting poultry, preventing vaccination failures, effect of environment and management practices on egg production, aortic rupture and internal hemorrhage in turkeys, managing the turkey breeder flock for improved fertility, management as a means of disease control and coryza.

Mr. Thomas will be moderator for a panel discussion on cholera in turkeys.

Registration will be at 8:30 a.m. Feb. 25 in the plant and animal science building. Following two sessions on Thursday and one on Friday, the short course is expected to be concluded about noon.

Wisconsin Tests Added Fat in Swine Feeds

MADISON, WIS.—There's no evident advantage in adding fat to pig or sow rations, according to University of Wisconsin researchers.

In tests, early weaned pigs getting added fat didn't gain faster or make more efficient use of their feed than those on normal rations. High levels of one kind of fat—corn oil at 16% of the ration—actually reduced gains and feed efficiency. Milking sows also did not benefit from added fat rations, said the scientists.

Researchers J. M. Asplund, Dr. R. H. Grummer and Dr. P. H. Phillips tried the added-fat feeding, "because it has worked very well in boosting daily gains and feed efficiency for poultry."

Pigs went on the tests at an average weight of 18 lb., and some were slaughtered for carcass data after seven weeks. The slaughter tests showed that fat feeding produced fatter carcasses, researchers said.

Gilts were fed the added fat rations within three days after farrowing. There was no advantage in litter weight gain, litter-plus-sow weight gain, or feed efficiency, said the researchers. Sows on added-fat rations gave milk with a higher fat content than those on normal rations in the test.

Tallow at 6½%, 11% and 16% and corn oil at 16% of the ration were fed to the pigs; sows got tallow at 10%, 15% and 20%.

Farmers' Bank Loans Rise at Rapid Pace

CHICAGO—Bank loans to farmers have continued to rise at a rapid pace in both the Midwest and in the nation, according to the Federal Reserve Bank of Chicago.

Non-real estate farm loans outstanding at member banks in the Seventh Federal Reserve District (excluding Chicago) on Oct. 6, 1959, were 28% above Sept. 24, 1958, and 7% above June 10, 1959. These increases were somewhat greater than the gains of 19 and 4% for the U.S.

Banks in the cattle feeding areas of Iowa and north and west central Illinois have experienced the largest gains in the district, reflecting both higher prices for feeder cattle and larger numbers of cattle on feed.

The non-real estate farm loans outstanding in these areas have increased 37% in the past year and 61% in the past two years. In the remainder of the district, "short-term" farm loans have risen about half as much as in the cattle feeding areas, 18% and 30% over the two periods.

Merck Vice President

RAHWAY, N.J.—Dr. Frank L. Cohen has been elected to the newly created post of vice president for operation of the chemical division by the board of directors of Merck & Co., Inc.

Formerly director of production, Dr. Cohen will have executive responsibility for engineering, purchasing, traffic, process and project development, and quality control as well as production. About 4,000 people are employed in these departments.

RECEIVES FFA AWARD

SPRINGFIELD, ILL.—Ted Myren, Springfield, sales manager, Faultless Milling Co., received an award for his active support of Future Farmers of America programs in central Illinois. He is past chairman of the section 14 sponsoring committee of the Illinois FFA Foundation.

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Aim of Research Is to Stimulate Udder Growth, Milk Secretion by Feeding Hormones

COLUMBIA, MO.—Will hormones some day be fed to stimulate growth of the udder and milk secretion in dairy cows?

This will be the case if the ultimate objective of University of Missouri research is eventually realized.

The current research and its results to date are described in a recent bulletin by Dr. C. W. Turner of the Missouri dairy husbandry department. The bulletin is entitled "The Experimental Induction of Growth of the Cow's Udder and the Initiation of Milk Secretion."

The experiments, described extensively in the bulletin, are part of a project to determine the role of the various endocrine glands and their hormones upon the growth of mammary glands and the secretion of milk.

The ultimate objective of the research, said Dr. Turner, is to stimulate udder growth and initiate milk secretion by incorporating the necessary hormones in concentrate rations for cattle. He noted that this objective cannot be realized immediately, but the most promising of certain new compounds will be tested.

Dr. Turner summarized the recent work as follows:

This experiment concerned the induction of growth of the mammary glands of the cow's udder by hormone injection, followed by experimental induction of milk secretion. Animals used in the test included 11 heifers of low fertility, three sets of normal twins, four freemartins and two normal animals.

Sixteen of these animals were injected daily with a mixture of 100 mg. of progesterone and 100 mcg. of estradiol benzoate for a period of 180 days to induce lobule-alveolar mammary gland growth. Four animals were fed 10 mg. daily of diethylstilbestrol in place of the estrogen.

Milk secretion was then stimulated by the injection of 3 mg. of estradiol benzoate daily for 14 days or more. All of the animals came into milk production except three freemartin heifers. The rise in milk production continued for periods of 5 to 14 weeks. The mean daily maximum yield was 22.7 lb. On the basis of all comparisons, it was concluded that the milk yield of these animals, which were induced to lactate experimentally, was from 80 to 90% of that which they might have produced had they calved normally.

It is interesting to note that many of the heifers of low fertility (had failed to conceive after repeated insemination) were bred after the induction of lactation and a number of animals gave birth to normal calves.

Dairy Study Grant

NEW YORK, N.Y.—American Cyanamid Co. has renewed its grant-in-aid to the University of Connecticut for studies with drugs and biologicals to help combat dairy cattle diseases.

The continuing research program is under the direction of Dr. W. N. Plastridge, who is utilizing both university facilities and cooperating dairy herds in the state to investigate new and better methods for mastitis prevention, and the possibilities of developing a vaccine for vibrio fetus abortion in dairy cows.

STORE OPERATOR DIES

DeKALB, MISS.—Funeral services were held recently for Bryant Little, 54, operator of the Kemper County Farm Supply Store. His death followed a long illness.

Cereal Grains Tested As Corn Replacement In Rations for Swine

URBANA, ILL.—The performance of pigs was not improved by replacing the corn in swine rations with any of the cereal grains tested during experiments at the College of Agriculture of the University of Illinois.

In the tests with pigs, barley, milo (grain sorghum), oats and wheat were evaluated as replacements for corn in corn-soybean meal rations fortified with vitamins, minerals and antibiotics. Pigs averaged about 45 lb. in weight to start and were fed until they weighed about 200 lb.

For some of the tests, each cereal replaced the corn on a pound-for-pound basis. In others, the rations were formulated to contain equal amounts of protein. This placed more emphasis on the protein quality and quantity of the grains since varying amounts of soybean meal had to be added to the different grains to provide a given protein level.

The soybean meal content of the ration varied from 6% with wheat to 16% with corn. Consequently, the total protein in the ration varied considerably in quality (amino acid balance).

When replacement was on a pound-for-pound basis, pigs on a milo or a wheat ration gained about 99% as fast as pigs fed a corn ration. The rates of gain on oats and barley rations were 88 and 54%, respectively, of the rate on corn.

Feed utilization followed a similar pattern, except that barley was 93% as efficient as corn in providing a unit of gain.

When protein levels were equalized, milo, wheat and oats rations produced gains that were 97, 85 and 82% of those on the corn rations. (Barley was omitted in this series of tests.) On the basis of feed efficiency, milo and wheat were 92% as efficient as corn; and oats was 81% as efficient.

The effect of pelleting upon ration utilization also was studied. All rations were fed in both meal and pellet forms. Pelleting markedly improved the feeding value of the barley ration, although the best performance on barley was still inferior to the poorest performance on the other cereals. These results suggest that the quality of barley used was very low.

Pelleting wheat and milo rations gave some increase in gain, but results with corn and oats rations were inconsistent. Feed efficiency was slightly improved by pelleting wheat and milo rations.

Carcass measurements are being evaluated to find out how cereal grain in the ration affects carcass quality.

HEADQUARTERS MOVED

BAY PORT, MICH.—Office headquarters of Wallace & Morley Co., which operates a chain of 18 grain elevators and 2 bean terminals in the Thumb, have been moved from Bay Port to Saginaw, according to Edward O. Crawford, president and general manager. An office will still be maintained at Bay Port, however.

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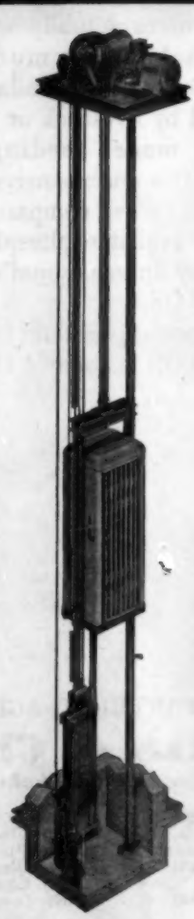

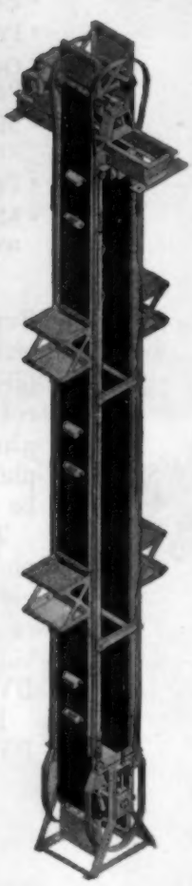

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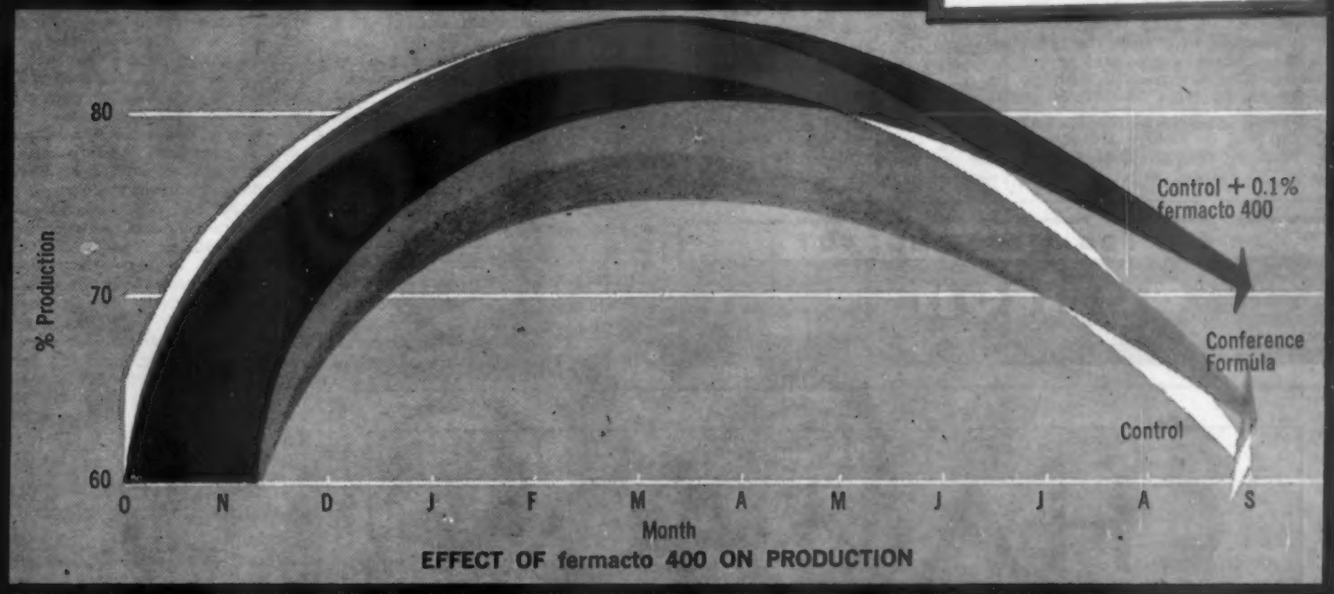
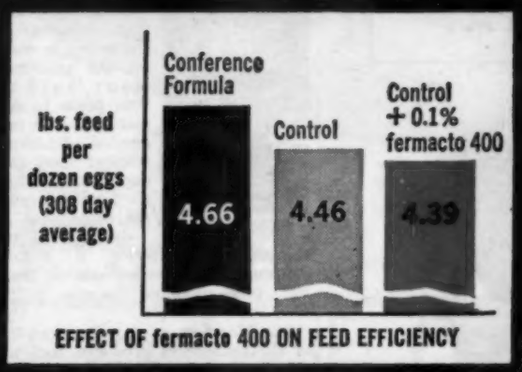
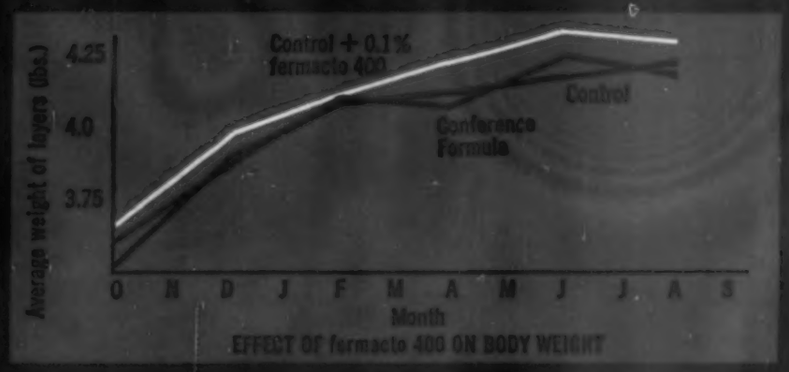


EFFECT OF fermacto 400 ON PRODUCTION



EFFECT OF fermacto 400 ON FEED EFFICIENCY



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Plans for Poultry Fact Finding Conference Set

CHICAGO — Program details for the American Poultry Industries' Fact Finding Conference Feb. 12-14 in Kansas City have been released by the group. Theme for the conference will be "Design for Decision."

At the same time, it was announced that a joint extension-industry meeting to explore the problem of condemnations of poultry has been scheduled in connection with the conference.

Featured speakers of the opening morning will be Robert T. Browne, the Pillsbury Co., Minneapolis, and Pierre Mantineau, director of research and marketing for the Chicago Tribune.

Saturday, down to the business of marketing, the speakers will be Robert T. Bailey, This Week magazine; Camille Jongleux, Restaurant Food Buyers, Inc., and William Humberg, editor of Food Merchandising.

A special interest session has been set for Saturday afternoon. Sponsored by the Chicago Mercantile Exchange, it is entitled, "How to Improve Egg Market Quotations."

At Sunday's session, Earl L. Butz, dean of agriculture at Purdue University, will take an analytical look at the variety of proposed federal legislation which will have an overall effect on the poultry and egg industry.

International markets for poultry and eggs will get a full treatment, too, by David L. Hume, director of the poultry and dairy division, Foreign Agricultural Service, and by C. E. Sidler, just back from Europe, where he served as European director for the Institute of American Poultry Industries in developing international markets.

Explore Condemnations

The joint extension-industry meeting to explore the problems of condemnations of poultry has been set for Feb. 12 at 3 p.m. in the Little Theatre of Kansas City, Missouri, Municipal Auditorium.

"Condemnations," said Harold M. Williams, IAPI president, "have shown a steady increase in recent years. It is estimated that at least 75 million pounds of poultry were condemned in 1959. This loss is a loss to producers of at least $13 million. A further loss is absorbed by contractors and processors . . . to say nothing of the loss caused by downgrading.

"Due to the seriousness of the problem and with the conviction that much of this can be eliminated, the institute has made a place on its fact finding program for this important session," he added.

Frank Gordy, poultry specialist, University of Delaware, will chairman the session. Dr. R. E. Omohundro, U.S. Department of Agriculture, will give a report on the survey of production practices in areas of high condemnations.

Dr. J. D. Winn, University of Connecticut, will analyze how poultry inspection data can assist state animal disease control programs to minimize condemnation losses.

Mr. Gordy will report on the extensive program already under way in Delaware and will discuss how the program might be adapted for use in other states.

Work Together

Consideration will be given as to how extension and industry men can work together to minimize the problem and how to develop preventive management programs that will effectively reduce the incidence of disease, thereby increasing the profit potential, Mr. Williams said.

Extension poultrymen are being advised of the joint meeting through extension directors by C. M. Ferguson, administrator of the Federal Extension Service, U.S. Department of Agriculture. Contacts are being made with processors, feed dealers and hatcherymen to urge that service men, representing these interests, attend and participate in this session.

The annual Fact Finding Conference is open to all who have an interest in the poultry and egg industries. Program details are available from the Institute of American Poultry Industries, 67 E. Madison, Chicago.

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Charles G. Marshall Named Firm's Head

MILWAUKEE — Charles G. Marshall has been named president of the recently formed Smoked Foods, Inc.

C. G. Marshall

Charles L. Bowman, chairman of the board, in making the announcement, said the firm plans to specialize in the production of hickory smoked food products for the food and pharmaceutical trade.

Smoked Foods is presently offering a hickory smoked yeast powder and is treating some products for use in the feed industry.

Mr. Marshall is also vice president of Bowman Feed Products, Inc., and Charles Bowman & Co.

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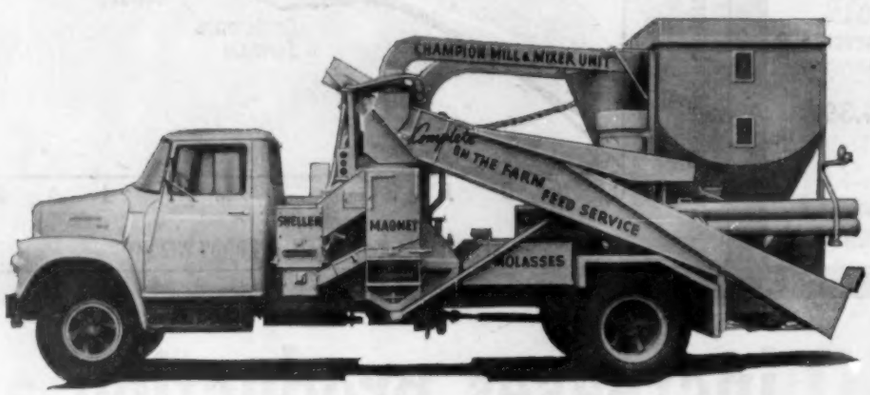

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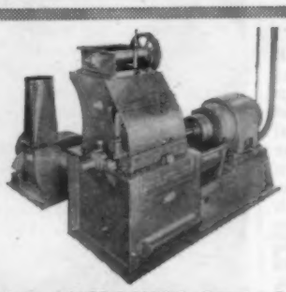

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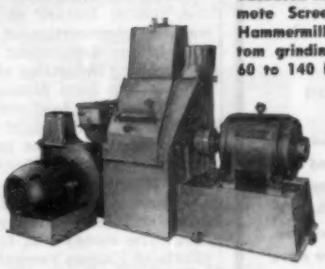

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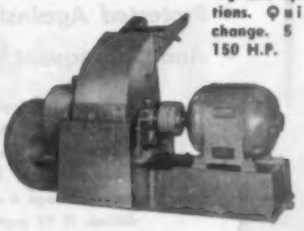
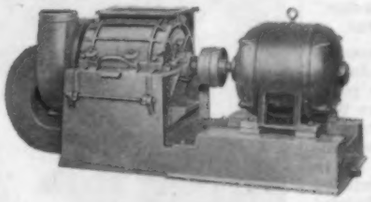


Jacobson AJACS Hammermill for custom grinding and special applications. Quick screen change. 5 sizes; 20 to 150 H.P.



Jacobson UNIVERSAL "Junior" Hammermill. 3 sizes; 10 to 50 H.P.

Jacobson AJACS Model "IT" Hammermill. 4 sizes; 20 to 100 H.P.

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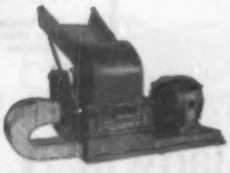

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RESEARCH

(Continued from page 62)

creep ration, one can push them more, and thus it is possible to get them to market earlier when prices may be more favorable. The ease of feeding and the reduction of losses from overfeeding are other important advantages.

Prof. Menzies added that for the large commercial lamb feeder or for the lamb feeder buying most of his feed, complete pelleted rations may be in order. However, for the farmer feeder who is interested in marketing his sorghum roughage and home grown feeds, pelleting is not economical as yet, he said.

In summarizing his discussion, Prof. Menzies mentioned the following advantages of pelleting rations for sheep: (1) Increases palatability, (2) less feed wasted, (3) faster rate of gain, (4) more efficient gain, (5 less death loss and digestive disturbances, (6) complete ration of roughage and concentrate plus any additives can be mixed and pelleted at desired levels and thus lambs must eat as mixed. (7) saves labor in feeding and (8) reduces roughage storage space.

Pellets for Beef Cattle

"Pelleting Rations for Beef Cattle" was discussed by Prof. Fred Boren, department of animal husbandry, KSU. Prof. Boren pointed out that today there is more and more interest in pelleting feed for beef cattle. Although this field of research has become very active, many nutritional and economic questions remain to be answered relative to the feeding of pelleted feeds or complete pelleted rations to beef cattle.

Prof. Boren stated that there are three approaches to the question of pelleted feeds for beef cattle, namely: (1) Pelleting of roughages, (2) pelleting of concentrate or roughage portion of the ration and (3) pelleting various combinations of roughages and concentrates.

In summary, Prof. Boren said that results of tests to date indicate that pelleting of roughages increases average daily gain and dry matter consumption. Apparently this increased gain and feed efficiency is due to the increased intake and the decrease in energy of digestion. Pelleting single ration components may result in a slight increase in daily gains and feed efficiency; however, pelleting highly concentrated rations may reduce gain, but markedly improve feed efficiency.

BANQUET—Prof. Tom Avery, head, department of poultry husbandry and chairman of the 1960 Kansas Formula Feed Conference, presided at the banquet, which was attended by 280 people.

Some 400 people attended the conference.

"University-Industry Relationships," was the title of the remarks presented by Dr. Arthur D. Weber, dean of agriculture and acting president of Kansas State University, following the banquet Jan. 5. Dr. Weber said, "K-State's feed technology program typifies modern university-industry relationships." He also stated that research projects in all fields are of direct value to Kansas agriculture, and strengthen university-industry relationships as exemplified in the feed technology program.

JOHN MONAGHAN MEMORIAL—A special feature at the banquet was the presentation of a check for $500 to the department of flour and feed milling industries as a memorial for the late John Monaghan, former director of the feed control division of the State Board of Agriculture. The presentation was made by Jack Grubb, president, Kansas Formula Feed Manufacturers, to Dr. John A. Shellenberger, head, department of flour and feed milling industries, KSU. The money was raised through efforts of Kansas Formula Feed Manufacturers.

An important part of the conference was the "Question Roundup," with Dr. D. B. Parrish in charge.

PANEL—Conclusion of the conference program was a panel discussion, "What We Expect." The panel was moderated by Dr. C. Peairs Wilson, director, Kansas State school of agriculture. Participants were university students and industry representatives. Panel members concluded that it would be extremely helpful to Kansas State students if the industry would come to the campus and tell the story of what industry has to offer and what it expects of students.

EXHIBITS—One of the distinguishing features of the conference was the exhibits and demonstrations. Dr. Paul E. Sanford, Kansas State department of poultry husbandry, was chairman in charge of the exhibits.

Dr. Waldron Hastings, department of flour and feed milling industries, and Dr. Otto Tiemeier, department of zoology, had on display live channel catfish that had been fed pellets. An appropriate sign gave instructions for feeding and formula for the pelleted feed.

Dr. Hastings also displayed three Beagle puppies that had been fed canned dog food he prepared. An accompanying chart gave the formula for the canned food that had been prepared by the class in feed technology.

The departments of entomology, veterinary anatomy and veterinary pathology cooperated with exhibits involving such things as how a pesticide is developed from chemist to dealer, pesticides and insecticides that are used for various insects and parasites, different nutritional diseases observed in livestock, comparisons of the stomach of a calf and adult cow and comparisons of the digestive tract of the chicken and bovine (cow).

SPONSORS—The conference was sponsored by Kansas State University; Kansas State Board of Agriculture, Topeka; Kansas Grain & Feed Dealers Assn., Hutchinson; Kansas Formula Feed Manufacturers, Abilene, and Midwest Feed Manufacturers Assn., Kansas City.

41 YEARS OF BUSINESS

KANSAS CITY — Forty-one years of continuous business relationships in millfeed trading were marked last week with a visit by Louis Toll, Scattergood & Co., Narberth, Pa., to the offices of J. P. Parks, J. P. Parks Co., Kansas City.

The two men have done business with each other since 1918, when Mr. Parks was with Weber Flour Mills Co., Salina, Kansas. Mr. Toll, who began business in the Scattergood firm in 1911, will celebrate his 50th business anniversary next year.

On his way to Phoenix, Ariz., Mr. Toll stopped in Kansas City and nearby Fort Leavenworth, where his son is stationed as an army doctor.

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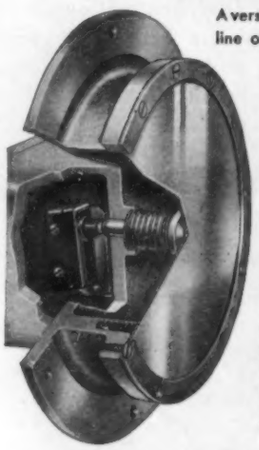

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SALESMAN AWARD — Gene Phillips, Pay Way district manager, receives the distinguished salesman award from Harvey Benson, sales manager for the Kansas City feed firm, at a company banquet.

Pay Way Chooses Outstanding Salesman

KANSAS CITY — Gene Phillips, Pay Way district manager, Cherryvale, Kansas, celebrated his 10th anniversary with Pay Way Feed Mills recently by winning the distinguished salesman award.

The distinguished salesman award was created by the National Sales Executive Club and is considered the highest professional recognition any salesman can receive. It is only awarded to one salesman of each company belonging to NSE.

Mr. Phillips won the 1959 Pay Way honor by scoring the highest number of points on a 12-part grading program. Though this program primarily covers selling activities, his record as a consultant in feeding and management to farmers and business management to dealers was adjudged as "particularly outstanding."

Mr. Phillips and his wife will be honored at a formal NSE banquet in Kansas City Feb. 9 when national and regional companies participating in the NSE program will introduce their "most distinguished salesmen."

Aureomycin Crumbles Promotion Underway

NEW YORK, N.Y.—A mid-winter promotion designed to help dealers sell more Aureomycin Crumbles is being offered to the trade by American Cyanamid Co.

Participating wholesalers and dealers will be supplied with sales aids consisting of information booklets, store banners, sample bags, advertising mats and radio scripts for local advertising.

Cyanamid is currently running a national advertising campaign in leading farm publications in support of the local dealer promotion.

As an added incentive for dealer participation, Cyanamid will give free with every 30-bag order of Aureomycin Crumbles, one pair of imported 7 by 35 mm. binoculars, and one man's or woman's Swiss watch with a 40-bag order, plus free goods with each promotion.

The Crumbles promotion will continue through Feb. 29.

Stockyards to Operate

LOS ANGELES—The Los Angeles Union Stockyards Co., originally scheduled to discontinue operations at the end of January, will remain open at least through the month of April, according to an announcement from the stockyards.

The postponement was decided upon to accommodate those who have used the market in the past for trading and to give them additional time to make other arrangements.

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WANTED—JOB IN FEED OR RELATED industry. Experienced administrator, sales, sales trainer, public relations. Sound agricultural background. College trained. Address Ad No. 5547, Feedstuffs, Minneapolis 40, Minn.

TECHNICAL MANAGEMENT—11 YEARS' experience in research, sales service and production; by-product development and mixed feeds, degree, 37, married. Address Ad No. 5543, Feedstuffs, Minneapolis 40, Minn.

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POULTRY SERVICE MEN—IS YOUR FUture uncertain in the feed or hatchery business? If you have the qualifications listed below, you owe it to yourself to investigate these opportunities created by our rapid expansion: (1) Degree in poultry husbandry or equivalent; (2) at least two years' experience with feed manufacturer and/or hatchery; (3) sales knowledge and experience; (4) thorough knowledge of poultry—including diseases; (5) age 25-45. Two territories—one Kansas and Missouri; the other Iowa and Nebraska. For the right men, these opportunities afford an excellent starting salary, expenses, company car, and extensive fringe benefits. Reply in confidence stating age, personal data, education, experience, salary requirements, and which territory you prefer. Address Ad No. 5586, Feedstuffs, Minneapolis 40, Minn.

SALESMEN

Progressive organization manufacturing and selling feed additive products is looking for two salesmen to handle expanded East and West Coast sales activities. Should have college training and several years' proven experience selling to feed manufacturers. Write giving details of background. Our salesmen know of this ad. Address Ad No. 5588, Feedstuffs, Minneapolis 40, Minn.

NUTRITIONIST

Good number 2 man under Products Director for feed formulation and quality-control responsibilities. Graduate degree in nutrition required—Ph.D. desirable.

Write

DIXIE MILLS COMPANY
P. O. Box 351
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CHEMIST TO HEAD TECHNICAL SERVICE LAB.

Will handle customer requests in Food, Pharmaceutical and Animal Feed Fields. Some background in Vitamins required. Five or more years of applicable experience desired. Rapidly expanding firm, northern New Jersey location. High salary. Send detailed resume and salary requirements to: Ad No. 5569, Feedstuffs, Minneapolis 40, Minn.

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EXPERIENCED GRAIN AND FEED MAchinery salesman needed by distributor and manufacturer, to cover exclusive established territory in Michigan. Draw and commission. Send photo, experience and references in first letter. Address Ad No. 5587, Feedstuffs, Minneapolis 40, Minn.

FEED BROKER, NORTHERN CALIfornia, seeks assistant, partly traveling, partly office. Nutritional background required. Business experience not essential. Write complete resume and qualifications to Feedstuffs, c/o William Healy, Western Merchandise Mart, San Francisco, Cal.

MACHINERY FOR SALE

12½-TON TOLEDO DIAL SUSPENSION hopper scale, like new, 32 inch dial, Model 2500. O. W. Meyer, Napoleon, Ohio.

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JAY BEE 4W HAMMERMILL, REBUILT, base, coupling, 6" fan, permanent magnet. Also 22 DD Dixie. Woods Feed Mill Supply, 241 Caldwell, Jacksonville, Ill.

STEINLITE NO. 400-G MOISTURE TESTer. Good condition, in use two years. Write for a bargain price. Edinburg Grain Co., Edinburg, Ind.

WHIRLAWAY AIRBLAST CAR LOADERS, cast iron pulleys, new and used feed and elevator equipment. Hagan Mill Machinery, P.O. Box 574, Jefferson City, Mo.

FEED MIXER, 1-TON CAPACITY, GUARanteed first-class throughout, 5 H.P. motor drive. Address Ad No. 5479, Feedstuffs, Minneapolis 40, Minn.

CHAMPION MOBILE GRINDER AND mixer units. Champion Portable Mill Co., 2105 Como Ave. S.E., Minneapolis 14, Minn.

FOR SALE—ENCLOSED MOTORS; RICHardson scale; truck scales; hammermills; oat crimpers; horizontal and upright feed mixers; sewing machines; elevator legs; screw conveyors; molasses mixers and pellet mills. J. E. Hagan Mill Machinery, Box 574, Jefferson City, Mo.

FOR SALE—60 SINGLE BURNER FLUEless type brooder stoves, 1,000 chick capacity. In good condition. Only one year old. Also Rowe vending machine, 1957 model, 100 dozen capacity. Somerville Poultry Farms Co., Box 309, Somerville, N. J.

SALE—SPROUT-WALDRON 335 CU. FT. horizontal ribbon mixer. Type 304 stainless steel dry material handling installation, including: 1,800 cu. ft. weigh hoppers, bucket elevators, shake and screw conveyors, etc. Perry, 1403 N. 6th St., Philadelphia 22, Pa.

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100 H.P. ACE SPROUT-WALDRON PELlet mill, complete with motor, coolers, pneu-vac air system; 60 H.P. Sprout-Waldron pellet mill and cooler; 50 H.P. heavy duty California pellet mill; 5-ton S. Howes Eureka horizontal mixer, with silent chain drive and 40 H.P. motor. Call or write J. E. Hagan Mill Machinery, P. O. Box 574, Jefferson City, Mo.; Phone 6-2197.

ONE WENGER 1000 SERIES HI-MOLASSES pellet mill complete, serial No. 78 equipped with new style pellet barrel and ¼" and ⅝" dies, 50 H.P. TEFC and 15 H.P. TEFC 440-3-60 motors with two dusting reels and two dust feeders; 56' of 12" incline drag conveyor, also Wenger 3'x16' pellet cooler with 15 H.P. fan and 75" collector complete, also Wenger fat tank series 100, serial 97 with 40"x48"x57" agitated tank heat coils, meter and pump. Will offer with or without motors. Address Ad No. 5540, Feedstuffs, Minneapolis 40, Minn.

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WANTED—ARID AIRE MODEL C DRYER. Write Box 306, Troy, Ohio; Phone Federal 9-6911.

WANTED — DEHYDRATED ALFALFA equipment. Especially Heil drums. State price, size and location. Address Ad No. 5572, Feedstuffs, Minneapolis 40, Minn.

WE ARE IN THE MARKET FOR TWO (2) batch feed mixers from 1 to 5 tons, horizontal and suitable for mixing molasses to feed. Quinn Menhaden Fisheries of La., Inc., Empire, La.

WANTED TO BUY — RICHARDSON scales, bag closing machines and other good mill, feed and elevator equipment. J. E. Hagan Mill Machinery, Jefferson City, Mo.

BUSINESS OPPORTUNITIES

FOR SALE—FEED, SEED, FERTILIZER and produce business. Retail outlet, national brands, 150,000 volume 1959. Address Ad No. 5582, Feedstuffs, Minneapolis 40, Minn.

FEED MILL, $2 MILLION BUSINESS IN 1959, fully equipped, built 1950; siding, 5 acres. Between Buffalo and Binghamton. Terms. Details Carl A. Willsey, Realtor, Elmira, N. Y.

FOR SALE—TO SETTLE ESTATE, FEED plant and produce business in the heart of the Red River Valley. Incubators and other equipment can be purchased separately. Call or write George E. Borlie, Hillsboro, N. D.

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FOR SALE IN KANSAS — FEED MILL with own line of commercial feeds and a large volume of custom work, now working with a major feed company. Plant has 30 to 40 ton daily capacity (commercial and custom) with approximately 80% now going out in bulk. Plant located in area of diversified farming with large numbers of dairy cows, beef cattle, hogs and poultry within service area. The 1959 turkey crop within a 20 mile radius was approximately 180,000 birds, and is being expanded rapidly. Reason for sale is domestic. Present manager would like to continue with firm. Address Ad No. 5564, Feedstuffs, Minneapolis 40, Minn.

MISCELLANEOUS

WE ARE INTERESTED IN CONTACTING a research farm capable of conducting research on all types of livestock. We would be willing to share expenses with the party who owns such a farm in order for us to have facilities to test our feed ingredients. What have you to offer? Address Ad No. 5570, Feedstuffs, Minneapolis 40, Minn.

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Two Bemis Bro. Bag Executives to Retire

ST. LOUIS—Bemis Bro. Bag Co., St. Louis, has announced the retirement of two vice president-directors, H. P. Claussen of the Boston office and R. M. Hersey of the Minneapolis office. The retirements are effective Jan. 31.

Mr. Claussen, vice president of procurement and materials, joined the firm in 1916, following his graduation from Massachusetts Institute of Technology. He was elected a vice president in 1946 and to the board of directors in 1949. He was named to his present position, a newly-created post, last June.

Mr. Hersey, vice president and sales director for national accounts, joined the firm in 1914 as a shipping department office boy in Boston. In 1953, he was elected to the board of directors and was named vice president and sales director for national accounts in 1956.

Mr. Claussen is a native of Hartford, Conn., and has been located in Boston during most of his 43-year career with Bemis.

Mr. Hersey, who was born in Boston, was graduated from Roxbury Latin School there and holds an AB degree from Harvard University. During all but the first five of his 45 years with the firm he has been located at the Minneapolis offices.

Feed Standard Data On Broilers Issued

DURHAM, N.H.—The Agricultural Experiment Station at the University of New Hampshire here has issued data entitled, "Growth and Feed Standards for Broilers, 1959," to give the state's poultry producers up-to-date, standard figures on broiler growth and feed consumption and conversion.

The data were compiled by Dr. W. C. Skoglund and Willis S. Reed of the university's poultry science department from studies with four commercially-available strains of broilers, typical of stock currently on the market. All were crosses, either of strains or breeds.

The birds were raised in a university building heated by a centrally-located hot water system, and each pen had a 250-chick capacity. Feeder space was increased as the birds matured, and a total of 5,250 chicks was reared in three different lots during all seasons.

The average figures presented in the University of New Hampshire data include weekly average weight and weekly gain for males, females and mixed sexes; weekly and cumulative feed consumption per broiler, and feed conversion calculated from mixed sex weight and gain.

NAMED CHAIRMAN

SACRAMENTO — Dean Weems, Weems Feed Co., Glenn, has been named chairman of the upper Sacramento Valley district of the California Hay, Grain & Feed Dealers Assn. He succeeds Bill Lohse. John Growdon, Northern Star Mills, Chico, will serve as vice chairman of the district.

Canada Nixes Late '59 Egg Payment Help

OTTAWA — The federal government will make no deficiency payment on eggs marketed in the three months to Dec. 31, 1959.

Agricultural Minister Harkness announced the decision here recently. He said the Agricultural Stabilization Board had reviewed the situation for the first quarter and reported that for the first seven weeks, from Oct. 1 to Nov. 21, 1959, the national average price received by producers was 36.2¢ doz. Canada Grade A Large eggs, or 3.2¢ a dozen above the support price, but for the last six weeks, from Nov. 21 to Dec. 31, 1959, prices had been lower. The board pointed out, however, that during the whole period, Oct. 1 to Dec. 31, 1959, the national average price received by producers was only a fraction of a cent a dozen below the prescribed price. In view of this fact no deficiency payment is considered necessary for this quarter.

Egg marketings to date are still relatively high and indications are that they may continue at a high level during part of the present quarter, with the result that the market will continue to be unsettled for some time. In view of this possibility and to provide assistance to producers during this period of adjustment, Mr. Harkness said the Agricultural Stabilization Board will make an interim payment to producers for eggs marketed during the period Jan. 1 to March 31, 1960, equal to the amount by which the national average price per dozen Canada Grade A large eggs during that period is lower than the prescribed price. The interim deficiency payment will be limited to a total of 1,000 doz. Canada Grade A large eggs to any one producer.

Feed Man Elected Board of Trade Head

LOUISVILLE, KY.—Edward C. Aubrey, vice president of the Aubrey Feed Mills here, was elected president of the Louisville Board of Trade at its annual meeting Jan. 12 at the Chamber of Commerce.

E. C. Aubrey

Other officers elected were: Carl F. Swanson, vice president, Cargill, Inc., and Wilburn A. Gordon, secretary - treasurer, Early & Daniel Co.

Elected to the board of directors, besides Mr. Aubrey, were: H. K. Blandford, Oscar Farmer & Sons; Frank G. Rankin, Gold Proof Elevator; Frank G. Bergamini, Kentucky Seed Co., and Henry A. Meyer, Henry Fruechtenicht Co.

FEED FIRM INCORPORATED

SIOUX FALLS, S.D.—Bridgewater Grain & Feed Co. here has filed articles of incorporation, listing $25,000 capitalization and these directors: John Siegfred, Brandon; Robert F. Richards, Bridgewater; and Harold F. Mayer, Bridgewater.

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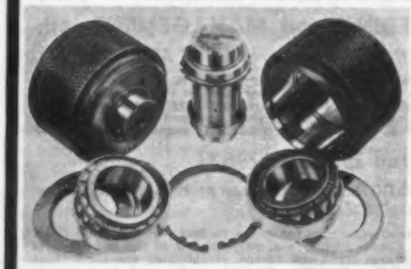

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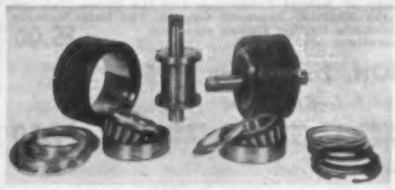

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A complete transcript of the 1958 Small Mill Short Course designed specifically for the Small Mill, Concentrate Mixer and Custom Miller. Covers such subjects as Receiving and Preparation, Mixing, Packing, Storing and Shipping, Typical Mill Layouts, Pelleting and Dust Collection **$5.00**

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A complete yet easily understood reference for swine feeders, breeders and those in auxiliary services to them. Covers history and development of the industry, its distribution, adaptation and future; types and breeds, establishing the herd, meat type breeds, selection and judging, breeding, feeding, grains and high energy feeds, protein, vitamin and milling by-product feeds, pastures, buildings and equipment, health and disease prevention, marketing and slaughter, management and showing. 543 pages, 192 illustrations..... **$5.30**

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CREDIT PINCH

(Continued from page 1)

hog prices. In the sugar beet areas the trouble is attributed to a late harvest and a decrease in the sugar content of beets this year, while the cotton area problems were associated with confusion over the new government crop restriction programs.

General Uneasiness

Although other areas were said to be in fair to good condition creditwise, it was obvious that there was an underlying uneasiness about farm credit in general, and if credit managers succeed in having their way, there will be a considerable tightening in credit terms and repayment schedules.

One feed man reported that his outstanding retail credit was twice what it was a year ago and past due accounts four to five times what they were a year ago. This situation was thought to be fairly typical over much of the area.

Alarmed at the situation in several of the areas there have been local meetings of business men in many lines who have discussed a plan of uniform credit policies.

Credit Plan

One of these plans adopted at a recent meeting was along the following lines:

(A) 1% cash discount on all purchases paid for at time of purchase, pick up or delivery.

(B) Charges made in one month will be due the first of the following month and must be paid by the 10th of the following month, when it will become past due.

(C) No further credit will be allowed when an account becomes past due.

(D) A service charge of 1% per month will be added to all past due accounts.

(E) If farming operations require longer term credit, a feed contract will be written which will require payment when livestock is sold. For longer term credit on fertilizer or seed, the merchant will work out credit terms with a banker or other lending agency for the customer.

One country point banker present said that while his firm was well "loaned up," it still would take on "good" agricultural loans, which is a general situation. Production Credit Administration officials present said that there has been no "tightening" of credit by PCA whose loans must be based on ability of the borrower to repay. There has been "an adjustment of credit in line with ability to pay," it was said. PCA loans in this area are up 20%, the government finance men stated, and PCA now serves 10,000 more farmers in the area than 10 years ago.

It was also pointed out that PCA has a plan whereby a dealer can write a loan to a customer on PCA money if the dealer will endorse the loan and take responsibility.

Both the government finance men and the bankers emphasized that seven or eight people cannot successfully finance a farmer. If control over credit is to be maintained, the financing must come through a single source.

Interest Rates

Although interest rates have gone up generally, not all feed manufacturers have raised rates to their customers. A number of feed manufacturing firms increased their interest charges from 6% to 7% recently, but the majority still are holding at the old level.

One credit man pointed out that with the prime interest rate of banks now at 5¼% with requirements of 20% kept on deposit, the cost of money to mills is at least 6%.

Whether this reluctance to advance interest charges is due to the fact that "it is easy to calculate one half per cent per month," as one man suggested, or due to other reasons was not made clear but apparently most of the 6% people have no plans to increase at present.

About 50 credit men attended the meeting, which was sponsored by the Kansas City division of the National Association of Credit Men under the auspices of the Midwest Feed Manufacturers Assn. David Snodgrass, Quaker Oats Co., presided and the round-table panel was conducted by D. H. Elmore, Ralston Purina Co.

Prior to the credit symposium, Martin Newell, Feedstuffs, discussed the outstanding trends in the feed industry as indicated by the opinions of feed manufacturers surveyed recently by Feedstuffs. The five major predictions for 1960 made by a majority of the feed manufacturers who reported in the national cross-section survey were: Higher tonnage in 1960, less profit, more integration in feeding projects, tighter credit and more local mixing and bulk delivery.

DELANEY CLAUSE

(Continued from page 1)

competitors. If only this proposal were enacted, all use of stilbestrol in feed would be ruled out.

Would Modify Clause

However, Mr. Flemming went one stop further when he proposed that the Delaney clause be modified to exempt additives which leave no residue either in the animal after slaughter or in any food product obtained from the living animal. There has been no showing that feeding stilbestrol leaves residues.

Congressman Delaney, who was present at the hearing when the secretary appeared, expressed approval of the official statement, saying in effect that Mr. Flemming had covered the situation thoroughly.

In his statement, Mr. Flemming went into great detail to cite scientific testimony on the danger of cancer from additives in food as well as use of chemical compounds in the production of food. He said that while potent cancer-producing compounds had been isolated, there also are lesser weak carcinogens.

He commented on inorganic chemicals such as certain arsenical compounds. In this part of his statement, Mr. Flemming said, "Experience in the laboratory does not predict unequivocally the reaction of humans to the same agent, be it carcinogenic or otherwise. On the other hand, those few pure chemical and physical agents known to produce cancer in man, with the possible exception of inorganic chemical compounds, have elicited cancer in animals."

(It may be noted that it has been generally agreed that there is no evidence that organic arsenicals used in feed induce cancer in man or animal. Industry groups have sought to have the arsenicals used in feed exempted from Delaney clause restrictions as interpreted by FDA.)

Note of Caution

The Flemming statement, interpreted as providing some promise of relief to the feed industry so far as use of estrogens is concerned, may be welcome. But one must reflect on the previous publicity-seeking activity of the secretary in the case of condemnation of cranberries and some poultry.

Incidentally, in his pontification on the subject of cancer which featured his address to the House committee, Mr. Flemming noted that exposure to sun-light with its intense ultraviolet rays was also a potential cause of cancer. One may ironically note that Mr. Flemming may be opposed to sun-bathing. Hollywood damsels, take care.

In an hour and one half statement read to the committee, it is noteworthy that Mr. Flemming poured on a history of cancer and the scientific knowledge now available.

This gentleman is a salesman par excellence. He softened up his audience with a cancer scare which certainly made it embarrassing if not impossible to challenge his requests for amending the pending bill in the House.

Last year the Senate passed a color additive bill which did not include the Delaney clause. At that time its sponsor, Democratic Alabama Sen. Lister Hill refused to include the Delaney amendment since he noted that when it was included in the food amendment, FDA officials opposed it on the grounds that it was difficult, if not impossible, to administer.

Since that time Mr. Flemming has taken over the reins, and he announced before this hearing here this week that he had ordered FDA officials not to oppose the Delaney amendment as part of the color additive amendment.

Although this hearing was basically concerned with the color additive amendment which has basic effects on colors used in cosmetics and lipstick, Secretary Flemming used this hearing as a sounding board to set forth his ideas on estrogens and other chemical compounds used in food, feeds and the production of food.

He appears to open an avenue of adjustment in regard to the use of estrogenic substances in animals providing no residues are found in the end products of the animals which have been so fed. But it must be remembered that in the case of an approved use of these substances in production of specialized poultry types, Mr. Flemming found new evidence which led to his "blitz" on caponettes immediately prior to the holiday seasonal market for such birds.

There still remains the suspicion that Mr. Flemming may be running for political advancement. His devotion to the stamp-out-cancer cause might very well be a spring-board to national fame or acceptance.

FEED MILL BURNED

LAWSON, MO. — Fire caused an estimated $30,000 damage to the Frank Vaughn mill here recently.

CONTROLLED ENERGY

(Continued from page 8)

duction," Dr. Wilhelm said. "This results in poor fertility and egg production early and affects both egg size and hatchability."

A display of birds raised on various diets, slaughtered, frozen and sawed in cross section compared the development of breeder pullets at the onset of production when fed corn, oats or Pullet Developer.

A third avenue of research underway considered at the seminar was a principle being investigated in broiler production.

"Actually, this is an application of the principle of restriction to broiler growth," Dr. Wilhelm points out. "When birds are grown on a low dietary regimen, and then switched to a much better diet, for a period of time, they use their feed more efficiently."

The research covering this has been pretty well completed, he notes, and is now being field tested on 200,000 commercial broilers. "This new principle promises to save up to ½¢ per bird," says Dr. Wilhelm.

Restriction of broiler breeder hens during egg production also was reviewed and the research in this work discussed. The researchers have used three different energy levels, three different strains of broiler breeders and birds brought into production at three different seasons of the year.

"While the method is not yet advocated by The Quaker Oats Co., developments to make it as error-proof as possible are in the making," Dr. Wilhelm says. "Research results indicate that it is possible to save about 2 lb. of feed per dozen broiler hatching eggs produced. This is about the equivalent of an extra chick per dozen eggs."

(Further details of the controlled energy discussions will be reported in a subsequent issue of Feedstuffs.)

TOP OF THE HOPPER

(Continued from page 2)

feed manufacturers to formulate lowest-cost feeds on the basis of ingredient prices, but they also would lower costs to feeders by removing a production and administrative burden (and nuisance) that also must be priced into the feed.

THERE APPARENTLY are some differences of opinions among larger feed manufacturers on interest rates to be charged on production loans made to feeders by feed companies. Some manufacturers have held the rates at 6%. Others cite the current high prime interest rates. They say that the rates charged by banks on loans to feed manufacturers, plus administrative and other costs on financing for feeders, make it necessary to have interest at 7% on feeder loans.

Meanwhile, a number of feed manufacturers have remarked recently that they feel strongly that the current tight money-high interest situation is a desirable thing for the feed industry. They view the situation as going a long way in curbing unsound financing and over-production.

THE PROBLEMS INVOLVED in and inherent in the current situation in regard to federal control of chemicals used in agriculture continue to occupy major attention of highly placed people in agricultural, chemical and related industries. So far, apparently, a lot of the activity is at a simmering stage behind the scenes. But moves, which bring in top level government officials, are reportedly being made by interested groups. Some predict that the whole thing will eventually break out in congressional halls, even though they hope that this can be avoided.

Recently a number of farm groups have made certain proposals, including a request that the President name an impartial fact-finding body to study chemical use and laws and procedures and recommend changes.

Meanwhile, in addition to the more evident problems related to the Delaney clause, technical people can cite important instances where they feel that the current federal law-regulatory situation is seriously stifling progress of major significance to the feed industry and agriculture. And comments, at least privately, are more than a little heated when some regulatory requirements are mentioned.

For one thing, developmental work on new products is in many cases halted or slowed. And when firms consider the tremendous investment necessary to get a new product or new use cleared, many are unwilling to run the risk at all, or they conclude that they will market a product only overseas and forget the U.S. market altogether. Thus, we may in some cases see foreign agriculture making use of U.S.-developed advances which are denied U.S. agriculture.

The FEED MARKET

PRICE QUOTATIONS, MARKET TRENDS
OF PRINCIPAL INGREDIENTS

NOTE: Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bulk, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

A AND D FEEDING OIL

Boston: Demand slow; supply ample; 400 D, 3,000 A 21½¢ lb.; 300 D, 3,000 A 21¢; 300 D, 2,250 A 19½¢; 300 D, 1,500 A 18¢; 300 D, 750 A 16¢; 75 D, 750 A 15½¢.
Denver: Demand fair; trend steady; supply ample; 2,250 A, 300 D 22¢ lb., f.o.b. Denver.
New York: Demand fair; trend steady; supply ample; 1,500 A, 300 D 16¢ lb.; 2,250 A, 300 D 17½¢ lb.
Chicago: Demand fair; trend steady; supply ample; straight A feeding oil, with 10,000 units vitamin A per gram, 7@7¼¢ a million units of vitamin A, l.c.l., packed in 55-gal. drums, f.o.b. Chicago, drums included.
Minneapolis: Demand fair; supply ample; 10,000 A 32¢ lb.; 300 D, 2,250 A 16¾¢ lb.; 300 D, 1,500 A 15½¢ lb.; 300 D, 750 A 14¢ lb.

ALFALFA MEAL

Boston: Demand slow; supply adequate; dehydrated, 17% $65; suncured, 13% $48.
Ft. Worth: Demand fair; supply moderate; sacked: dehydrated 17%, 100,000 A $67.80@68 rail, $67 truck; suncured 13%, ¼-in. grind No. 1 $46 truck; 15% fine ground $52, rail or truck.
Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $63.
Memphis: Demand fair; trend steady; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $66.50.
Philadelphia: Demand and supply fair; 17% dehydrated $68.50.
New Orleans: Demand fair; trend steady; supply adequate; 17% protein, 100,000 vitamin A $67@68 bulk, $72@73 sacked.
Denver: Demand fair; trend steady; supply ample; dehydrated $52, sacked meal; $50, bulk pellets.
Omaha: Demand fair; trend strong; supply tight; 17% dehydrated, 100,000 A units, bulk pellets $52; sacked meal $57; Omaha basis.
Los Angeles: Demand steady; trend firmer; supply tight; dehydrated meal, 17% protein, 100,000 A $58; dehydrated pellet meal, 17% protein, 100,000 A $59; suncured meal, 15% protein $51@52; suncured crumbles, 15% protein $53@54.
St. Louis: Demand slow; trend steady; supply adequate; suncured, 13% fine, sacked $44; dehydrated, 17%, 100,000 A pellets, demand slow, trend steady, supply ample, bulk $57.
Minneapolis: Situation unchanged; demand slow; supply ample; 17% dehydrated, 100,000 units vitamin A reground pellets $58@59; oiled reground pellets $60@61, sacked $4 more.
Chicago: Demand slightly better; trend steady to higher; supply ample; 17% protein, dehydrated with 100,000 units vitamin A $58.50@60; 13% protein, suncured $40.50 @42.50.
Buffalo: Demand fair; trend steady; supply adequate; $73.50, sacked, Boston.
Kansas City: Demand slow; trend steady; supply adequate; 17% dehydrated alfalfa, guaranteed 100,000 A on arrival, reground pellets $55 bulk, pellets $53@54 bulk; 18% dehydrated alfalfa, guaranteed 125,000 A on arrival, reground pellets $56@59 bulk; 20% dehydrated alfalfa, guaranteed 150,000 A on arrival, reground pellets $65; suncured alfalfa demand slow, ample supplies, 15% pellets $35@36.50 bulk, No. 1 ¼-in. $38.50@39, No. 2 ¼-in. $36.50 sacked.

ANIMAL FAT (STABILIZED)

Louisville: Demand very dull; trend weak; supply good; bleachable white 5½¢ lb.; white tallow 5¾¢ lb.; yellow grease 5¼¢ lb.
Boston: Demand slow; supply plentiful; tallow 5¾¢ lb.; yellow grease 4¾¢ lb.
Ft. Worth: Demand fair; supply moderate; prime tallow, tank cars 5¾¢ lb.; drums 8¼¢ lb., f.o.b. north Texas packing plants with returnable drums.
New Orleans: Demand fair; trend easy; supply adequate; 6@6½¢ lb., tank cars.
San Francisco: Demand fair; supply ample; bleachable fancy 6¢ lb.; yellow grease 4¾¢ lb.
Ogden: Supply ample; $5.25 cwt.
St. Paul: Demand good, considering seasonal influence; supply ample; price steady at 5¼¢ lb., f.o.b. producer's plant.
Chicago: Demand good; trend steady to easier; supply ample; bleachable fancy tallow, tank truck or carlots $5.57½ cwt.; yellow grease $5 cwt.
Kansas City: Demand slow; trend weak; supply ample; 4¾@5¢ lb., f.o.b. plants.

BARLEY FEED

Philadelphia: Demand slow; supply fair; $46.
Boston: Demand poor; supply ample; $41.
New Orleans: Demand slow; trend unchanged; supply ample; $51@52, sacked.
Los Angeles: Demand fair; trend steady; supply adequate; standard rolled $3.05 cwt., standard ground $3.05 cwt., both sacked.
Denver: Demand good; trend firm; supply fair; rolled $2.05 cwt.
Ogden: Supply good; rolled $47@52, whole barley $42@47.
San Francisco: Demand fair; supply ample; rolled $61, ground $60.
Baltimore: Demand good; trend firm; supply fair; $48.50, sacked.
Chicago: Demand good; trend steady; supply fair; $38, sacked.

BENTONITE (SODIUM)

Cincinnati: Demand steady; supply adequate; f.o.b. Cincinnati, minimum 30-ton carlots: 80 granular $31.50; less than car lots $40; 200 mesh fine $31; less than ton lots $40.
Denver: Demand fair; trend steady; supply ample; $34.50, f.o.b. Denver.
Chicago: Demand fair; trend steady; supply ample; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $16.50; fine granular, 80 to 100 mesh $13.75; powder, 200 mesh $13.50, f.o.b. Belle Fourche, S.D., minimum 30-ton carlots, 80 granular $13.50 net; 200 mesh, fine $13.25 net.

BLOOD FLOUR

Louisville: Demand slow; trend firm; supply good; $82.50@87.50, sacked.

BLOOD MEAL

Louisville: Demand slow; trend steady; supply good; $82.50@87.50, sacked.
New Orleans: Demand dull; trend steady; supply ample; $82.50@87.50, sacked.
Ogden: Supply ample; $87.50 in 100-lb. bags, f.o.b. Ogden.
Los Angeles: Demand better; trend firmer; supply tighter; $5.75 a unit of ammonia, sacked.
Omaha: Demand good; trend strong; supply fair; 80% $100, sacked, Omaha.
San Francisco: Demand fair; supply ample; $3 a unit of ammonia, sacked.
Chicago: Demand and supply fair; trend higher; 80% protein $120, sacked.

BONE MEAL (STEAMED)

Los Angeles: Demand slow; trend steady; supply limited; imported $51, 20 ton lots, sacked.
Denver: Demand fair; trend steady; supply ample; $109, Denver.
Louisville: Demand slow; trend steady; supply normal; $82.50@87.50, sacked.
New Orleans: Demand fair; trend easy; supply ample; $82.50@87.50, sacked.
Boston: Demand and supply steady; $105.
Cincinnati: Demand fair; trend steady; supply adequate; $105, sacked, Cincinnati.
San Francisco: Demand good; supply ample; $75, sacked.
Buffalo: Demand good; trend steady; supply limited; $105, sacked.
Chicago: Demand and supply fair; trend higher; $100, sacked.

BREWERS DRIED GRAINS

Philadelphia: Demand and supply fair; $55.50.
Los Angeles: Demand slow; trend unchanged; supply adequate; $50.50.
New Orleans: Demand fair; trend steady; supply good; $52@53, sacked.
Boston: Demand fair; supply spotty; 26% $53; 22%, sacked $56.
Ft. Worth: Demand fair; supply sufficient; 26% protein $53.90, February.
Cincinnati: Demand fair; trend steady; supply adequate; $52.
Louisville: Demand and supply good; trend steady; $53, sacked.
New York: Demand fair; trend steady; supply moderate; $53 bulk, $60 sacked, Boston basis.
San Francisco: Demand fair; supply ample; $54, sacked.
Buffalo: Demand fair; trend steady to lower; supply fair to good; $53, Boston.
St. Louis: Demand fair; trend steady; supply light; $46.
Chicago: Demand fair; trend easier; supply ample; 26% protein $44.50.

BREWERS DRIED YEAST

Denver: Demand light; trend steady; supply ample; 8¢ lb., f.o.b. Golden, Colo.
Louisville: Demand and supply good; trend firm; 10@10½¢ lb., sacked.
Cincinnati: Carlots 11¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb.
Omaha: 10½¢ lb.
Los Angeles: Demand fair; trend unchanged; supply adequate; 10¢ lb., 5-ton lots; 11¢ lb., 1-ton lots; 12¢ lb., less than ton lots, all sacked.
Boston: Demand and supply steady; 10¢ lb.
San Francisco: Demand fair; supply good; 10¢ lb., sacked.
Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb., all sacked.
New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢ lb.; ton lots 11½¢ lb., all sacked.
New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., all sacked, f.o.b. New Jersey.
Buffalo: Demand fair; trend steady; supply ample; $9.65 cwt.
Chicago: Demand fair; trend steady; supply ample; 9½@10¢ lb., carlots, sacked; 9¾@12¼¢ lb., l.c.l.
Milwaukee: Demand fair; trend steady; supply ample; 10½@12¼¢ lb., ton lots.
St. Louis: Demand fair; trend firm; supply ample; 9½@10¢ lb., carlots, sacked; 10½¢ lb., ton lots; 11½¢ lb., less than ton lots.

BUTTERMILK (CONDENSED)

Los Angeles: Demand slow; trend unchanged; supply adequate; 5½¢ lb., 100-lb. lots; 4¾¢ lb., 500-lb. lots, both in barrels.
Philadelphia: Demand slow; supply light; $4.25 cwt.
Louisville: Demand and supply nil; trend firm; $4.25 cwt. in paper drums, nominal.
Ogden: Supply good; $4.40, 100-lb. drum.
New Orleans: Demand slow; trend unchanged; supply adequate; $4.15@4.25 cwt.
Boston: Demand and supply steady; 3.95¢ lb.
San Francisco: Demand fair; supply good; $5 cwt. barrels.
Chicago: Demand quiet; trend firm; supply adequate; $3.50@3.75 cwt., in barrels.

CALCITE CRYSTALS AND FLOUR

(All prices net, sacked, including freight)

New York: Crystals $16.28, flour $10.28.
Buffalo: Crystals $17.11, flour $11.11.
Toledo: Crystals $18.96, flour $12.96.
Boston: Crystals $17.63, flour $11.63.
Lime Crest, N.J.: Crystals $11.50, flour $5.50.

CALCIUM CARBONATE

Cincinnati: Demand fair; trend steady; supply adequate; $7@7.50 cwt.
Los Angeles: Demand slow; trend unchanged; supply adequate; flour $10.15, 20-ton cars; meal $11.15, 20-ton cars; both sacked.
Chicago: Demand fair; trend steady; supply ample; fine grind, plain, 100-lb. bags $9.54; bulk, in hopper cars $7.54; bulk, in boxcars $8.04; granular grind $1 premium.
Minneapolis: Fine grind, 50-lb. bags $12.25, 100-lb. bags $11.50; bulk, boxcar $10; bulk, hopper $9.50; coarse grind $1 premium, delivered Minneapolis.

CHARCOAL

Los Angeles: Demand fair; trend unchanged; supply adequate; hardwood poultry, $156, sacked, less than ton lots; $144.40, sacked, ton lots.
Boston: Demand and supply steady; $110.
San Francisco: Demand steady; supply ample; $141, sacked.
Chicago: Demand fair; trend firm; supply fair; 50-lb. multiwalls $110.

COCONUT OIL MEAL

Los Angeles: Demand fair; trend unchanged; supply limited; copra cake $85.
San Francisco: Demand good; supply tight; solvent $69.50.

COD LIVER OIL (FORTIFIED)

Boston: Demand slow; supply ample; 300 D, 3,000 A 22¢ lb.; 600 D, 2,250 A 20½¢; 300 D, 2,250 A 20¢; 600 D, 1,500 A 19¢; 300 D, 1,500 A 18½¢.
New York: Demand fair; trend steady; supply satisfactory; 1,500 A, 300 D 16½¢ lb.; 3,000 A, 300 D 20¢ lb.

CONDENSED FISH SOLUBLES

Denver: Demand poor; trend steady; supply ample; dried $147, Denver.
New Orleans: Demand light; trend easy; supply fair; $42.50@50, f.o.b. Gulf.
Boston: Demand and supply steady; 4¾¢ lb.
Los Angeles: Demand slow; trend unchanged; supply adequate; 3¢ lb.
New York: Demand fair; trend unchanged; supply adequate; $45, f.o.b. shipping points.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are bulk basis, sacked basis $5 more)

Minneapolis: Feed $49.50, meal $67.90.
Atlanta: Feed $55.98, meal $73.98.
Birmingham: Feed $54.64, meal $72.54.
Boston: Feed $54.84, meal $72.84.
Chicago: Feed $43, meal $61.
Cleveland: Feed $51.14, meal $69.14.
Denver: Feed $53.51, meal $71.51.
Ft. Worth: Feed $51.96, meal $69.96.
Indianapolis: Feed $48.36, meal $66.36.
Kansas City: Feed $43, meal $61.
Louisville: Feed $50.21, meal $68.21.
New Orleans: Feed $53.20, meal $71.20.
New York: Feed $55.43, meal $72.43.
Norfolk: Feed $53.71, meal $71.71.
Philadelphia: Feed $54.02, meal $72.02.
Pittsburgh: Feed $51.96, meal $69.96.
St. Louis: Feed $43, meal $61.
Decatur, Ill.: Feed $36.75, meal $57.75.

CORN OIL MEAL

Cincinnati: Demand fair; trend steady; supply adequate; $49.
Louisville: Demand slow; trend steady; supply normal; $57.45, sacked.

COTTONSEED OIL MEAL

New Orleans: Demand slow; supply ample; trend steady; $71.50@72.50, sacked.
Louisville: Demand fair; trend easy; supply good; old or new process $65.50, sacked.
Wichita: Demand good; supply sufficient; 41% old process $74, sacked.
Cincinnati: Demand poor; trend steady; supply adequate; $66, Cincinnati.
Ft. Worth: Demand slow for meal, fair for hulls; offerings increasing; Arkansas, 41% old process $62.50@63; solvent 2% fat added $60.50@61; pellets $3 additional; cottonseed hulls $14.
Boston: Demand slow; supply light; $79, sacked.
Ogden: Supply good; 41% $75@80.
Los Angeles: Demand slow; trend unchanged; supply adequate; $71@72.
Philadelphia: Demand dull; supply fair; $73.
Memphis: Demand poor; trend lower; supply ample; prime 41% protein, old process $55.50; new process, 41% solvent $55.50.
Omaha: Demand slow; trend easy; supply ample; 41% solvent $65.70, delivered, Omaha.
Denver: Demand fair; trend steady; supply ample; 2% $65.40, Denver.
San Francisco: Demand good; supply tight; 41% $69; 44% $73.
Kansas City: Demand slow; trend steady to weak; supply ample; 41% old process $56, Memphis; 41% solvent $56, Memphis.
St. Louis: Demand slow; trend steady; supply ample; solvent $60.
Buffalo: Demand fair to poor; trend lower; supply adequate; $79.50, sacked, Boston.
Chicago: Demand easier; trend lower; supply ample; Memphis basis: hydraulic $56.50, solvent $56.

CURACAO PHOSPHATE

New York: $48 sacked, $46 bulk, f.o.b. New Orleans, Jacksonville or Philadelphia.

D ACTIVATED ANIMAL STEROL (POWDERED)

Cincinnati: Demand fair; trend steady; supply ample; 1,500 ICU 11@12¢ lb.; 3,000 ICU 10¢ lb., warehouse.
Kansas City: Demand fair; trend steady; supply adequate; 1,500 ICU 9¾¢ lb.; 3,000 ICU 11½¢ lb.

D ACTIVATED PLANT STEROL (POWDERED)

Chicago: Demand fair; supply ample; 4,000,000 U.S.P. units per lb., 15¢ lb. in ton lots, less than ton lots 17¢ lb.; 12,000,000 units per lb., 5 tons to a carload 28¢ lb., ton lots and less 30¢ lb.

DEFLUORINATED PHOSPHATE

Tupelo, Miss.: Minimum phosphorus 14%, minimum calcium 28%, maximum fluorine .14% $57.07, f.o.b. Tupelo in 100-lb. multiwall bags, $54.07 bulk.
Wales, Tenn.: Minimum phosphorus 18%, minimum calcium 33%, maximum 36%, maximum fluorine .18% $71.80 (or $3.98 per unit of P), f.o.b. Wales in 100-lb. multiwall bags, $3 less in bulk.
Coronet, Fla.: Carload, bagged $66.25 and bulk $63.25; truck load, bagged $67 and bulk $64, f.o.b. Coronet, Fla.
Houston: Minimum phosphorus 19%, minimum calcium 32%, maximum calcium 35%, maximum fluorine .19% $74.35 net ton, f.o.b. Houston; 100-lb. multiwall bags $71.35, bulk.
Cincinnati: 18% phosphorus $81.02; 14% phosphorus $71.03, f.o.b. Cincinnati.

DICALCIUM PHOSPHATE

Trenton, Mich.: 18½% P $83, bulk, boxcar/hopper car; $86, bagged, in carloads or truckloads; $96, bagged, in less than carload lots; 21% P, $94.65, bulk, boxcar/hopper car; $97.65, bagged in carloads or truck loads; $107.65, bagged, less than carload; all prices f.o.b. Trenton, freight equalized with nearest producing point.
Chicago: Bulk 18.5% phosphorus, carlots or trucks $83; 20,000 lb. or more $86 net ton in 100-lb. papers; less than 20,000 lb. $96, basis Chicago Heights, Ill., or Nashville, Tenn.; 21% phosphorus, carlots or trucks, bulk $94.65; 20,000 lb. or more, per net ton in 100-lb. papers, $97.65 and less than 20,000 lb., $107.65, basis Chicago Heights, Ill., or Nashville, Tenn.
Bonnie, Fla.: Minimum phosphorus 18½%, granular, $86 (or $4.65 unit of P), freight equalized from nearest producing point, carload basis; bulk carloads $3 less; in truck loads of less than 10 tons, $10 more. Western slope prices: for delivery at established railroad stations and by truck at regular feed mixing plants: California, Arizona, Nevada and Utah, $99.90; Washington, Oregon, Montana and Idaho $107.15; bulk carloads $3 less; truck loads less than 10 tons, $10 more.
Columbia, Tenn.: Minimum phosphorus 18¼%, minimum 25% calcium, maximum .01% fluorine guaranteed $83.25, f.o.b. Columbia, in 100-lb. multiwall bags; freight equalized with nearest producing point, carload basis; bulk $3 ton less.
Texas City, Texas: Carload and truckload, bagged $86.50, bulk $77.50, f.o.b. Texas City, Texas.
Cincinnati: 18¼% phosphorus $92.16, f.o.b. Cincinnati.
Denver: Demand fair; trend steady; supply ample; $95.80, f.o.b. Denver.

DISTILLERS DRIED GRAINS

Louisville: Demand good; trend steady; supply normal; bourbon grains: light $58, dark $60, solubles $77, all sacked.
Philadelphia: Demand slow; supply light; $63.
Cincinnati: Demand fair; trend steady; supply adequate; $53@54.
Boston: Demand good; supply spotty; domestic $54, Canadian $63.
San Francisco: Demand fair; supply ample; solubles $85, sacked.
Buffalo: Demand fair to good; trend steady; supply fair; $64, bulk, Boston.

DRIED BEET PULP

Denver: Demand excellent; trend very strong; supply nil; $32.50, f.o.b. Colorado factories; $34.50, f.o.b. Colorado factories, pellets.
Ogden: Supply ample; $41@46.
New Orleans: Demand fair; trend steady; supply adequate; $52@53, sacked.
Ft. Worth: Demand slow; supply sufficient; 50-lb. papers $54, 30-day shipment, delivered Ft. Worth.
Los Angeles: Demand slow; trend easier; supply more plentiful; $47.60@49.40.
Boston: Demand slow; supply light; $53, sacked.
San Francisco: Demand good; supply fair; $45.20.
Buffalo: Demand and supply fair; trend steady; $53, sacked, Boston.

DRIED BUTTERMILK

Los Angeles: Demand slow; trend steady; supply adequate; 13¢ lb., sacked.
New Orleans: Demand fair; trend steady; supply ample; $14@14.50 cwt.
Louisville: Demand slow; trend weak; supply light; $13.50@14 cwt., sacked.
Boston: Demand good; supply short; 14¢ lb.
Ogden: Supply ample; $17.25 cwt.
San Francisco: Demand fair; supply ample; 11½¢ lb., sacked.
Chicago: Demand quiet; trend steady; supply fair; medium acid $12@12.50 cwt., sweet cream $12@12.50 cwt., both sacked.
Buffalo: Demand good; trend steady; supply limited; $13.75 cwt.

DRIED CITRUS PULP

Los Angeles: Demand good; trend steady; supply limited; orange pulp $43; lemon pulp $42.
Boston: Demand slow; supply ample; $33, sacked, f.o.b. Florida.

New Orleans: Demand fair; trend easy; supply normal; $32.50@35, sacked, f.o.b. Florida plants.

San Francisco: Demand and supply fair; $49, sacked.

Buffalo: Demand fair; trend lower; supply adequate; $32, sacked, f.o.b. Florida points.

DRIED SKIM MILK

Philadelphia: Demand slow; supply light; $12.50 cwt.

Boston: Demand steady; supply scarce; 13¢ lb., nominal.

Cincinnati: Demand fair; trend steady; supply adequate; 13@14¢ lb., sacked.

New Orleans: Demand slow; trend unchanged; supply ample; $14@14.50 cwt., sacked.

Louisville: Demand slow; trend easy; supply normal; 13½@14¢ lb., sacked.

Los Angeles: Demand slow; trend unchanged; supply adequate; 15¢ lb., less than ton lots, sacked; 14¾¢ lb., ton lots, sacked.

Ogden: Supply ample; $15.15, 100-lb. drum.

San Francisco: Demand and supply fair; 13½¢ lb., sacked.

Chicago: Demand moderate; supply fair; trend steady; $12@12.50 cwt., sacked.

Minneapolis: Supply still scarce; demand good; market steady at $13.75 cwt., sacked.

Buffalo: Demand fair; trend steady; supply limited; spray $13.85 cwt.

DRIED WHEY

Wichita: Demand light; supply ample; $6.50 cwt., sacked.

Boston: Demand and supply steady; 5⅝¢ lb., f.o.b. shipping point.

Kansas City: Demand fair; trend steady; supply adequate; regular or partially delactosed $5.50 cwt., producers' points.

Cincinnati: Demand fair; trend steady; supply adequate; $6 cwt., sacked.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6, sacked, delivered Ft. Worth; $6.25 ton lots, f.o.b. warehouse, Ft. Worth.

New Orleans: Demand fair; trend easy; supply ample; $6@6.50 cwt., sacked.

Ogden: Supply normal; $6, 100-lb. bag.

Philadelphia: Demand slow; supply light; $6.50 cwt.

Denver: Demand fair; trend steady; supply ample; $6.50 cwt.

Louisville: Demand dull; trend easy; supply light; $6.50 cwt., sacked.

Los Angeles: Demand slow; trend unchanged; supply adequate; $5.93 cwt., carloads, sacked; $6.23 cwt., l.c.l., sacked.

San Francisco: Demand steady; supply good; $5.75 cwt., sacked.

Minneapolis: Demand good; supply not quite as tight as in past weeks; price undertone on the soft side at $5.50 cwt.

Chicago: Demand slow; trend firm; supply ample; $5.75@6 cwt., sacked.

FEATHER MEAL (HYDROLYZED)

Boston: Demand and supply steady; $80, sacked, f.o.b. shipping point.

Ft. Worth: Demand good; supply moderate; 85%-87% protein $75, sacked, f.o.b. trucks, north Texas plants.

Los Angeles: Demand better; supply adequate; trend steady; $1 a unit of protein, sacked.

Salisbury, Md.: Demand spotty; supply plentiful; $86, f.o.b.

FISH MEAL

Los Angeles: Demand slow; trend weaker; supply adequate; local production, 60% protein $1.75@1.80 a unit, sacked.

Denver: Demand fair; trend steady; supply ample; $1.85 a unit of protein, f.o.b. West Coast.

Omaha: Demand good; trend firm; supply ample; 60% menhaden $130, f.o.b. Omaha.

Louisville: Demand slow; trend easy; supply normal; $145, sacked, nominal.

Cincinnati: Demand fair; trend steady; supply adequate; $145.

Ft. Worth: Demand fair; supply sufficient; 65% protein $115, sacked, delivered Ft. Worth.

Boston: Demand slow; supply good; $120, sacked.

New Orleans: Demand dull; trend easy; supply ample; menhaden, 60% $110@116, sacked; scrap $106@111, sacked.

Ogden: Supply good; $1.70 a unit, f.o.b. Coast; 65% $115@117.

New York: Demand fair; trend steady; supply satisfactory; 60% menhaden meal $115, f.o.b. shipping points.

San Francisco: Demand slow; supply ample; $1.70 a unit of protein, sacked.

Minneapolis: Demand slow; supply ample; downward price trend continues; Gulf menhaden $135@140, sacked, down $3; 70% Canadian herring steady at $1.65 a unit of protein, f.o.a. Pacific Northwest Coast; 60% blended $138@140, sacked, off $1 on the high side.

Buffalo: Demand just fair; trend easier; supply ample; 60% protein, menhaden $125 bulk, $130 sacked.

Chicago: Eastern and Gulf menhaden $110 @115, scrap $106@111, Canadian herring $1.60@1.80 a unit.

HAY

Wichita: Demand good; supply insufficient; prairie $23@25; alfalfa $32@34.

Philadelphia: Demand slow; supply light; $24@25.

Boston: Demand and supply steady; No. 2 timothy $40@42.

Louisville: Demand dull; supply good; trend unchanged; local hay, any variety, No. 1 $30@32, No. 2 $28@30; straw $20 @22.

Cincinnati: Demand poor; trend steady; supply adequate; No. 1 timothy $24@25; alfalfa clover mixed $27.50; No. 1 red clover $26@27; alfalfa, first cutting $32, second cutting $25; wheat or oat straw $18@20.

Ft. Worth: Demand fair for alfalfa, very slow for prairie and Johnson grass; supply sufficient; carlots, baled, No. 1 alfalfa $40 @42, No. 2 $38@40; No. 2 prairie $24@26; No. 2 Johnson grass $22@24, delivered Texas common points.

Ogden: Supply good; $25 in the barn.

Denver: Demand and supply fair; trend good; $30, new hay, first cutting; $32@33, new hay third cutting alfalfa, baled.

Los Angeles: Fair demand; very small offerings; U.S. No. 1 $43@44; U.S. No. 2 leafy $40@41; U.S. No. 2 green $41@42; U.S. No. 2 $37@39.

HOMINY FEEDS

Memphis: Demand poor; trend steady; supply ample; white $41, yellow $41.

Cincinnati: Demand fair; trend steady; supply adequate; $45.

Boston: Demand slow; supply plentiful; $51.

Kansas City: Demand slow; supply adequate; yellow, white or mixed $33@33.50.

New Orleans: Demand fair; trend steady; supply ample; $46@48.50, sacked.

Louisville: Demand slow; supply normal; $50 50, sacked.

St. Louis: Demand slow; trend steady; supply adequate; yellow $40.

Buffalo: Demand and supply fair; trend steady; $51, bulk, Boston.

Chicago: Demand slightly better; trend higher; supply fair; $41.

LINSEED OIL MEAL

Louisville: Demand slow; trend easy; supply normal; old process $94, new process $85.50, both sacked.

Boston: Demand slow; supply adequate; 34% $82.50.

Kansas City: Demand slow; trend easy; supply ample; solvent process $66.50@67, Minneapolis; old process $75.50, Minneapolis.

Cincinnati: Demand poor; trend steady; supply adequate; new process $67; old process $76, Minneapolis.

Ft. Worth: Demand slow; supply sufficient; 34% protein, solvent $84, rail.

New Orleans: Demand slow; trend easy; supply ample; $88.50@90.

Omaha: Demand slow; trend steady; supply ample; 34% solvent $72.80; 32% old process $81.30, Omaha basis.

Denver: Demand and supply fair; trend steady; $84.30, Denver.

Los Angeles: Demand moderate; trend firm; supply very limited, mostly resale; local production, 31% protein $75@76.

Philadelphia: Demand and supply fair; trend unsettled; 34% $85.

Wichita: Demand fair; supply sufficient; 34% $85.50, sacked.

San Francisco: Demand fair; supply ample; $77.

Minneapolis: Buying interest light and trading slow; no change in values; new process $67, old process $75.

Chicago: Demand and supply fair; trend steady; Minneapolis basis: solvent $66.50@ 67, expeller $75.50.

LIVER AND GLANDULAR MEAL

Omaha: Demand and trend fair; supple ample; 65% $180, sacked, Omaha.

MALT SPROUTS

Boston: Demand and supply limited; $48, sacked.

Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $46, sacked.

New Orleans: Demand fair; trend easy; supply ample; $40@41.50, sacked.

Chicago: Demand fair; trend easier; supply adequate; $33.

MEAT AND BONE MEAL

Louisville: Demand slow; trend steady; supply good; $82.50@87.50, sacked.

Omaha: Demand good; trend strong; supply fair; $80.

Wichita: Demand good; supply insufficient; 50% $83, sacked, f.o.b. plant; 55%, no quotations, no offerings.

Kansas City: Demand slow; trend easy; supply ample; 50% $72.50@75, f.o.b. Kansas City.

Cincinnati: Demand good; trend steady; supply short; 50% meat and bone scraps $78.50, Cincinnati.

Ft. Worth: Demand good; supply scarce; $100, sacked, f.o.b. Ft. Worth, local manufacture.

Ft. Worth: Demand good; supply sufficient; meat and bone, 50% $77.50, f.o.b. Ft. Worth.

Boston: Demand improved; supply steady; $1.25 a protein unit; converted, 50% $75.

New Orleans: Demand slow; trend easy; supply ample; $80@85, sacked.

Ogden: Supply ample; $77.50, 50% protein, 100-lb. bags.

Denver: Demand good; trend steady; supply ample; 50% $70, sacked, truck lots; $67, bulk lots.

Los Angeles: Demand steady; trend unchanged; supply more plentiful; 50% protein $1.70 a unit.

New York: Demand good; trend steady; supply sufficient; 50% $72.50, sacked; 55% $80, sacked, New York.

San Francisco: Demand fair; supply ample; $1.50 a unit of protein.

St. Louis: Demand good; trend steady; supply adequate; $75.

St. Paul: Demand slow; supply adequate; price sliding downward; $72@78, off $4@6.

Buffalo: Demand just fair; trend easier; supply ample; 50% meat scraps $75 bulk, $80 sacked.

Chicago: Demand fair; trend higher; supply ample; 50% protein $80.

MILLFEED

Minneapolis: Demand slower and prices down some; middlings off $1 at $38, sacked; bran $39@39.50, sacked; red dog steady at $42, jutes.

Kansas City: Demand fair; trend steady; supply of spot tight, prompt ample; sacked bran $35.50@36; bulk bran $31@31.50; sacked shorts $35@35.50; bulk shorts $32.50 @33; bulk middlings $31.50@32.

Wichita: Demand fair; supply ample; Kansas City: bran $35.75@36.25; shorts $35.75@36.25, sacked.

Ft. Worth: Demand good; offerings sufficient; bran $39.10, burlaps $42.50@43; gray shorts $39.60, burlaps $42.50@43; bulk middlings $39.10, delivered Texas common points; $4.50@5 lower on bran; $5@6 lower on shorts; $6 lower on middlings compared with previous week.

Chicago: Demand on the quiet side during week ended Jan. 27. Offerings, while not actually liberal, have been more numerous than the markets for either bran or middlings have been able to absorb without being reflected in the price structure. On the other hand, call for red dog has been just heavy enough, coupled with the somewhat restricted offerings, to result in an advance of about $1 ton compared with declines of $2@2.50 on bran and $1@ 1.50 ton on middlings. Quotations, per ton, carlots, Chicago basis: bran $36.50; middlings $37.50; red dog $45.

Omaha: Demand fair; trend steady; supply ample; sacked bran $36; sacked gray shorts $36.50; bulk standard midds. $34.50; all Omaha basis.

Cincinnati: Demand poor; trend lower; supply adequate; bran $44, middlings $43.

Memphis: Demand fair; trend steady; supply ample; wheat bran $39.20; gray shorts $41.20; standard midds. $40.20.

St. Louis: Demand slow; trend steady; supply ample; bran $35.50@36, middlings $36@36.50.

Boston: Demand very cautious; supply plentiful; bran $48.50; middlings $49.50.

Buffalo: Trading in bran and middlings was exceptionally quiet last week. Some mixers went West during the recent General Mills "wildcat" strike here and doubled up on their inventories. Prices have staged a sideways-to-lower movement since the strike. Local levels had been above those in the West, but the spread has narrowed and now they are about even. The sacked differential on bran and middlings narrowed to $4.50 from $5. Bulk bran ended $2 lower, sacked was off $2.50. Middlings lost their premium over bran. Bulk middlings declined $3 and sacked dropped $3.50. Red dog held unchanged. Quotations Jan. 27: bulk bran $39.50@40.50, sacked $44@45; bulk middlings $39.50@40.50, sacked $44@45; bulk red dog $48@50.50, sacked $50@55.

Philadelphia: Demand spotty; trend unsettled; supply fair; bran $48.50, standard midds. $49.50, red dog $54.

New Orleans: Demand good; trend easy; supply ample; sacked, bran $47.50@48.75, shorts $47.50@48.75; bulk, bran $45.25@ 46.50, shorts $46.25@47.50, middlings $46.25 @47.50.

Louisville: Demand dull; trend weak; supply good; bran $47.10, mixed feed $47.60, shorts $48.60, middlings $50.36, all sacked.

Ogden: Supply ample; to Utah and Idaho: red bran and mill run $36, middlings $41; to Denver: red bran and mill run $43, middlings $48; to California: red bran and mill run $43.50, middlings $48.50, f.o.b. San Francisco and Los Angeles.

Denver: Demand improved; trend steady; supply ample; shorts $39.25, bran $39.25, mill run $39.25.

San Francisco: Demand slow; supply ample; millfeed $41.50; red bran $46.50.

Los Angeles: Standard mill run $43.50@ 44, some improved demand, firmer trend, lighter offerings; red bran $49@50.50, slow demand, easier trend, ample supplies.

MINERAL FEED

Ogden: Supply good; $113 ton in 50-lb. blocks; $103 ton, granular, 50-lb. bags.

Ft. Worth: Demand fair; supply sufficient; all-purpose granules $90, block $97; mineral phosphorus 6% granules $106, block $113; cattle-sheep mineral 7% phosphorus granules $100, block $107; hog mineral phosphorus 3½% granules $87, phosphorus 2% $77 (all in 50-lb. bags).

Wichita: Demand heavy; supply adequate; all-purpose with iodine, 50-lb. blocks $97.50, 100-lb. bags $92.50, f.o.b. plant.

Denver: Demand fair; trend steady; supply ample; $100.

San Francisco: Demand steady; supply good; all-purpose with iodine $70, sacked.

Sioux City: 50-lb. mineral blocks 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

MOLASSES

New York: Demand fair; trend lower; supply adequate; 14¢ gal., Albany.

Denver: Demand fair; trend steady; supply ample; 9¾¢ gal., New Orleans; $16.67 ton, New Orleans; $20 ton, West Coast.

Louisville: Demand fair; trend easy; supply normal; 9¾¢ gal., tank car lots, f.o.b. Gulf ports.

Memphis: Demand poor; trend steady; supply ample; blackstrap 9¾¢ gal., tank car, f.o.b. New Orleans.

Boston: Demand active; supply plentiful; 14¢ gal. in tank cars.

New Orleans: Demand good; supply ample; trend steady; 9¾@10¢ gal., tank cars and trucks; 600-lb. customers' drums $6.92.

Kansas City: Demand slow; supply ample; trend steady; blackstrap 9¾¢ gal., f.o.b. New Orleans.

Cincinnati: Demand fair; trend lower; supply adequate; 9¾¢ gal., New Orleans.

Ft. Worth: Demand good; supply sufficient; blackstrap 10¾¢ gal., f.o.b. Houston; delivered Ft. Worth, truck $25.08, seller's market price on date of shipment.

Los Angeles: Demand good; trend steady; supply ample; $20, f.o.b. tank cars; $20.25, f.o.b. tank trucks.

Kansas City: Demand fair; trend steady; supply ample; 9¾¢ gal., f.o.b. cars, New Orleans.

San Francisco: Demand and supply good; $20, f.o.b. cars, Richmond, Cal.

St. Louis: Demand slow; trend steady; supply ample; 9¾¢ gal., tank car, New Orleans.

Minneapolis: First price change recorded in several months, now $28.50, tank truck, delivered, down $1.50 from last week, primarily due to lower price tags on competing ingredients; demand remains good, supply adequate.

Buffalo: Demand fair; trend lower; supply good; 14¢ gal., f.o.b. Albany.

NIACIN

New York: 50% $1@1.20 lb.

OAT PRODUCTS

Boston: Demand and supply fair; white pulverized, sacked $60; reground oat feed, sacked $32.

Cincinnati: Demand poor; trend steady; supply adequate; reground oats $30; pulverized white oats $52.50, sacked.

Ft. Worth: Demand slow; supply moderate; oat millfeed $61.70; reground $33.70, February, sacked, new jutes.

Los Angeles: Demand slow; trend firm; supply limited; local production, pulverized $68, sacked.

Louisville: Demand fair; trend steady; supply ample; reground oat feed $30.80, rolled $87.30, feeding $79.80, pulverized white $53.80, crimped white $70.80, all sacked.

Memphis: Demand poor; trend steady; supply ample; 2½% protein, reground oat feed $30.75.

Philadelphia: Pulverized whites, demand slow, supply fair, $53; domestic demand slow, supply light $31.85; Canadian oat feed demand slow, supply light $35.50, sacked.

Minneapolis: Dull market, but no price changes from last week; feeding rolled $83, feeding oatmeal $68, pulverized $47.50, reground oat feed $26, crimped $61, all sacked prices.

Chicago: Demand fair; trend steady; supply ample; reground oat feed $23.50; No. 1 fine ground feeding oatmeal $77; feeding rolled oats $78.85@80.

OYSTER SHELL

Cincinnati: Demand fair; trend steady; supply adequate; $24.45, sacked.

Boston: Demand and supply steady; in paper $26.50.

New Orleans: Demand and supply good; trend steady; $24@24.50 in papers.

Los Angeles: Demand slow; trend unchanged; supply ample; $14.50, sacked.

Louisville: Demand good; trend steady; supply normal; in paper: 50-lb. sacks $23.45, 50-lb. sacks $23.70, 25-lb. sacks $25.95.

San Francisco: Demand fair; supply ample; local $15, eastern $26, sacked.

PEAT MOSS

Philadelphia: Demand slow; supply nil; $2.90, f.o.b. pier, nominal.

Los Angeles: Demand fair; trend steady; supply adequate; Canadian 5.6 cu. ft. bales $3.65.

Boston: Demand and supply steady; $3.15 a bale, in carlots.

San Francisco: Demand and supply fair; $3.65 a bale.

Chicago: Demand fair; trend steady; supply ample; standard 7½ cu. ft. bales $3.80.

POTASSIUM IODIDE, U.S.P.

Cincinnati: Demand good; trend steady; 90% KI in calcium stearate or carbonate mixtures: 250-lb. drums $1.35; 200 lb. in 100-lb. drums $1.35; 100-lb. drums $1.38; 25-lb. drums $1.41, f.o.b. Cincinnati.

Chittenango, N.Y.: Demand good; trend firm; supply ample; standard blends, 90% KI, 10% stearate or carbonate mixture, 100 lb. drums $1.32 lb.; 200 lb. and up $1.30 lb., all delivered.

POULTRY BY-PRODUCTS

Ft. Worth: Demand excellent; supply very short; 55% protein $85@87.50, nominal, sacked, f.o.b. north Texas plants.

Boston: Demand fair; supply spotty; $69.

Los Angeles: Demand good; trend steady; supply limited; $1.50 a unit of protein.

Salisbury, Md.: Demand good; supply adequate; meal $88, f.o.b.

RIBOFLAVIN

Cincinnati: Trend steady; feed grade (in feed supplements) 4¢ gm. in less than ton lots, in 3.36 to 16 gm./lb. mixtures; 3¢ in ton lots or more; freight prepaid or paid to destination.

New York: $40 kilo in 4 and 16 gm./lb. mixtures.

RICE BY-PRODUCTS

Los Angeles: Demand fair; trend unchanged; supply adequate; California production, high fat content, bran $52.50, sacked.

Ft. Worth: Demand slow; supply limited; rice bran $36, f.o.b. south Texas rice mills; hulls $3.50, sacked, f.o.b. mills.

San Francisco: Demand good; supply ample; bran $45, polished $49, both sacked.

SCREENINGS

Cincinnati: Demand fair; trend steady; supply adequate; unground screenings $26.50 @26, Cincinnati.

Ft. Worth: Demand slow; supply limited; ground mixed grain $27.50@29.50.

Minneapolis: Supplies tighter than ever, very little domestic screenings available; the minute trickle of Canadian offerings is being swallowed up in Canada, with nothing to speak of moving into the U.S. Following prices nominal because of slim trading: Canadian $28, Duluth; domestic lights $12@20; mediums $21@29; heavies $30@40; flax screenings, basis 15% $48.

Buffalo: Demand fair; trend steady to higher; supply poor; ground, sacked $42.25, New York; unground, bulk $36, New York.

Chicago: Demand quiet; trend higher; supply fair; ground grain screenings $37.50; Canadian $30.50.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

(Sacked)

Atlanta: $20.40@20.67.
Buffalo: $25.31@25.45.
Chicago: $24.77@24.90.
Cincinnati: $23.47@23.60.
Des Moines: $25.23@25.35.
Kansas City: $24.88@25.
Memphis: $22.20@22.47.
Minneapolis: $25.92@26.06.
Philadelphia: $24.32@24.95.
St. Louis: $24.14@24.27.

SORGHUMS

Ft. Worth: Demand good; supply sufficient; No. 2 yellow milo $2.03@2.05, delivered Texas common points.

Ogden: Supply ample; milo $42@43.

Los Angeles: Demand better; trend firmer; supply ample; milo $2.17½ cwt.

SOYBEAN OIL MEAL

Philadelphia: Demand and supply fair; 44% $56, Decatur.

Omaha: Demand fair; trend easy; supply ample; 44% $62.60, delivered Omaha.

Los Angeles: Demand slackened; trend weaker; increased offerings; $60.40.

Louisville: Demand fair; trend easy; supply good; $68.20, sacked.

Ogden: Supply ample; $77@82.

Kansas City: Demand poor; trend weak; supply plentiful; spot supplies pressing, $55.50@56, Decatur basis.

Minneapolis: Slow feed business cutting into demand; 44% down $2@2.50 from last week to $61.50@62, immediate; February-April $62.50.

Wichita: Demand good for sacked, fair for bulk; supply ample; 44% $70, 50% $76, sacked; 44% $67, 50% $73, bulk, f.o.b. Wichita.

Cincinnati: Demand poor; trend lower; supply adequate; $60, Decatur.

Ft. Worth: Demand slow; supply pressing for nearby delivery; 44% $65.60@66.10 February, $66.10@67.60 March forward; 50% protein $74.30 February, $75.30 April-July; trucks: 44% $65.60@66.10; 50% protein $74.30, prompt.

Boston: Demand fair; supply ample; 44% $66.50, 50% $61.50, both f.o.b. Decatur.

New Orleans: Demand slow; trend easy; supply ample; $71@72, sacked.

Chicago: Prices down as a reflection of

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the general letdown in demand and the cash commodity being just a trifle burdensome. Declines in 44% protein content ran from $2@2.50 ton on unrestricted billing and from $3@3.50 ton on eastern trunk line. For the 50% offerings, price cuts were not nearly as severe. Unrestricted billing was down only $1 ton and eastern trunk line off $2. In the meantime, soybean meal futures at Chicago, while showing some selloff for the week, were down only to a very moderate extent compared with the cash meal offerings. Quotations, Decatur basis: 44% protein, unrestricted billing $58.50@59 and eastern restricted $54.50; 50% protein, unrestricted billing $65 and eastern restricted $60.

Denver: Demand poor; trend steady; supply very tight; $73, Denver.

Memphis: Demand slow; trend steady; supply ample; prime 44% solvent $61, f.o.b. Memphis.

San Francisco: Demand fair; supply ample; $82.40.

St. Louis: Demand slow; trend steady; supply ample; 44% $58.

TANKAGE

Louisville: Demand fair; trend firm; supply good; $82.50@87.50, sacked.

Chicago: Demand fair; trend higher; supply adequate; 60% protein $80, sacked.

St. Paul: Demand slow; supply adequate; downward trend; $75@78, down $3@4.

New Orleans: Demand dull; trend steady; supply good; 60% protein $82@85, sacked.

Omaha: Demand good; trend strong; supply fair; $80.

Kansas City: Demand slow; trend easy; supply ample; 60% digester $72.50@75, f.o.b. Kansas City.

Cincinnati: Demand good; trend strong; supply fair; 60% digester $80, Cincinnati.

Ft. Worth: Demand fair; supply light; 60% digester $76.25, Ft. Worth.

Wichita: Demand good; supply insufficient; 60% $83, f.o.b. plant, sacked.

St. Louis: Demand good; trend steady; supply adequate; $77.50.

VEGETABLE AND ANIMAL FAT (HYDROLYZED)

Ft. Worth: Demand fair; supply adequate; 4½¢ lb., f.o.b. north Texas area.

STORAGE

(Continued from page 7)

ing and to take advantage of price-support financing. CCC must have space to house its own surplus price-support stocks. Private industry must also be in position to store its holdings.

"The storage job has been handled very well in recent years, in contrast to the serious shortage problems of some past periods. We intend to make any adjustments which may be found necessary to insure a continuance of sound operations.

"In view of the very wide range of costs shown in the current cost survey, for instance, it might be desirable to study the possibility of variable contracts which could recognize these major differences.

"Most of all, we need clear understanding and cooperation in continuing to meet one of our most complex operating problems. We must be aware of changing conditions and adjust to them, but headline-hunting charges based on misinterpretation of partial information cannot serve the best interests of farmers, the warehouse industry or the government."

The 432 warehouses upon which the survey results are based represent 4.5% of the 9,610 commercial houses in the country which were furnishing full storage service at the time of the survey. Of this total, 9,010 were classed as "country" and 600 as "terminal" warehouses. The survey results were extended to cover this entire group.

The field survey was based on the last fiscal year for each warehouse surveyed (the fiscal year period as used by that house).

The survey covered storage of the eight grains and related commodities included under the Uniform Grain Storage Agreement — wheat, corn, oats, barley, rye, grain sorghums, soybeans and flaxseed.

Occupancy High

Percentage of occupancy, an important consideration in connection with storage costs, was high during the period for which the cost survey was made. On the over-all average, about 80% of all the storage space the 432 warehouses had available for storing grains for others (grain not owned by the warehouse itself) was occupied.

Only direct operating costs were included in the survey. The estimates reported do not include indirect costs such as quality deterioration, shrinkage and return on capital investment.

Average direct operating cost, excluding other expense items previously mentioned, was shown by the survey to be 10.1¢ bu. for country warehouses, on an annual basis. For terminal warehouses, it was 8.6¢ bu. The over-all average, for both types, was 9.5¢ bu. direct operating cost to the warehouse for a year.

Only half the space the commercial industry has available for storing grain for others falls within the groups of houses where the storage costs are at or below the averages. A check of the "cost per bushel" groups (Table 2), shows that the direct storage costs go up to about 13.5¢ bu. for the groups that would have to be included to cover around 85% of the total commercial space which is "available." In recent years, the government, farmers and others have needed a very high percentage of all space.

Costs for handling grain (loading-in and loading-out) are not included in the estimates for direct storage operating costs. Handling charges are covered as separate items under the Uniform Grain Storage Agreement.

The preliminary and incomplete results of the storage-cost survey,' as well as later findings, will be available for use in continuing conferences with representatives of the commercial storage industry. These conferences look toward renegotiation of the present Uniform Grain Storage Agreement, USDA noted. Any changes in rates or other provisions which might be found desirable would be incorporated in a new agreement to be effective July 1, 1960.

The two accompanying tables give details of over-all findings in the preliminary analysis of the field survey of direct grain storage costs. Table 1 shows the number and type of warehouse facilities covered in the survey, the extension to reflect all commercial storage, the total capacity of warehouses and the amounts available to store grain for others and total and average costs for direct storage.

Table 2 shows costs of storage for different groups, the capacity available in the different groups for storing grain for others and the percentage of the total "available" facilities which would be covered at different storage cost levels.

FEED PANEL

(Continued from page 7)

Ray, American Feed Manufacturers Assn., Chicago; W. H. Udell, north Pacific state division, Ralston Purina Co., and M. V. Wolfkill, Wolfkill Feed & Seed Co., Monroe.

Four talks will fill the afternoon program of the first day.

"What's the Pitch?," a humorous lesson in salesmanship, will be given by H. Keith Loder. Cecil Clark, member of the Washington State House of Representatives, will speak on the "Proposed Agricultural Marketing Order."

Following this, Col. John K. McCormick, U.S. commanding officer of the 26th Artillery Group, Seattle Army Air Command, will talk on "The Army Missile Program." He will show exhibits of various missiles with explanations of each. John McCallum, nationally known author and lecturer, will close out the program with "Horatio Alger to See You, Sir."

Special events scheduled for the program include a Sunshine Hour, sponsored by the central Washington dealers, at 6:30 p.m. Feb. 11; a ladies luncheon at 12:30 p.m. Feb. 12; a Sunshine Hour for men and women at 5:30 p.m. Feb. 12, and a buffet dinner for men and women at 6:30 p.m. Feb. 12. Dancing will follow the latter event.

Group committees and their chairmen include: Convention, E. Jack White; reception, Robert Campbell; finance, M. V. Wolfkill, and central Washington, Ray Whitcomb.

PROMOTION

(Continued from page 1)

as a major step in raising money for poultry industry promotion. Promotion groups within the industry have traditionally collected funds from all levels and producers have counted on allied industry support. It can be supposed that integrators have known complications in assessing themselves three times on the same birds—as hatcherymen, as feed manufacturers or dealers and as processors.

The two base policy changes on which the NBC board based its actions are: Setting up a "total sales" promotion geared to nearly the needs of the changing industry and financing the program on "a fair and equitable basis."

Problems Reviewed

NBC's board announced its "hard-sell" program for broilers after reviewing the selling problems of the broiler industry and its impact on dollar sales.

One of the facts they faced was that last year the industry had to take an average of 2.5¢ lb. less than in 1958, even though the number of broilers to be marketed was about the same as in 1958. This loss of consumer demand, the council said, cost the industry some $105 million during 1959.

Board directors noted that tremendous changes have come about in the broiler industry and in distribution channels since the founding of the original NBC finance plan. "And, at the same time," they said, "the importance of powerful selling has become more vital."

Commenting on the promotion plan announced by the NBC board, Don Corbett, NBC president, said, "This is not something that came together quickly. Many of the programs outlined have been proposed by the board. Meetings have been held with many individuals and groups in the industry. The needs of the industry were put down, and then a program was outlined to meet them."

SOUTHEAST

(Continued from page 1)

Following are summaries of convention talks given at the general and specialized egg, broiler and turkey sessions:

CREDIT CONDITIONS FOR 1960—"Credit, rather than the market, will be the poultry industry's corset for 1960," was the prediction by a leading business consultant and economist.

Dr. Robert L. Dince, School of Business Administration, University of Georgia, Athens, reporting on a special study made for the Southeastern Poultry and Egg Association on the credit conditions for 1960, went on to report that this credit restraint could prevent overproduction and ruinously low prices.

Financial statistics collected revealed that the industry on the whole was under-capitalized and compared unfavorably with other borrowers, he said. A survey of selected credit institutions showed that the credit sources were now aware of this situation. The total bank credit for broiler production fell by 33% from the end of April to the end of November which is a greater percentage change than the broiler placements, which dropped only 27%. This illustrates that there has been a liquidation in bank credit, Dr. Dince said. Repayments have been greater than new loans for every month of the year since May.

The study also pointed out that: Almost all of the credit institutions felt that poultry was substandard collateral; the financial statements of the industry were in many cases technically deficient, and better auditing techniques are needed, and low profits have depleted the credit standing of leading poultry borrowers, and some reported that normal markets would have to come before credit could be extended in the same fashion as previously. However, one reported that the industry was going through a growing up phase, and that it would stand by the well managed borrowers; all were in agreement that closer scrutiny of borrowers and more restraint in lending were necessary.

Dr. Dince further stated, "The credit situation is not going to be alleviated in the immediate future. The production of poultry will be regulated by credit."

The survey analysis was concluded by Dr. Dince stating that "I will crawl out on a limb, with a prediction of credit conditions for 1960 as follows:

"First: Net worth and proven management ability will become more and more important as the determinants of credit lines. The unhappy experience of some bankers finishing out birds they had suddenly acquired will see to that. By managerial ability, I mean more than efficient chicken management — I mean business ability involving internal controls and better marketing techniques.

"Second: While bank credit will rise during 1960, it will not equal the high totals of May 1959. Thus credit will be rationed in the industry, and the price you pay for bank loans will be at an all time high.

"Third: Broiler prices will not swing as much from low to highs during 1960, and total broilers put out will not equal (at least for the Southeast) the highs of 1959."

WHAT MAKES A GOOD BUSINESS MANAGER?—"Profits can be made only after costs are recovered, and no amount of volume will yield a profit if done at below costs," said Dr. Emol A. Fails, a partner in Fails and Shephard Consultants, Raleigh, N.C. Dr. Fails pictured this as the dilemma facing several segments of the poultry industry in 1960.

Dr. Fails, also a North Carolina State College professor, challenged managers to know their costs of doing business and the inter-cost relationships. Both his talks — to the general session and later at the turkey meeting—were in keeping with the convention theme: "Let's Face The Facts."

"The one outstanding characteristic of a manager who makes money is his burning desire to win," Dr. Fails said. The good manager wants to lick any problem regardless of its nature, so he sets out to cause the desired result.

Dr. Fails listed these additional attributes of a good manager: He has the right attitude or philosophy, the necessary personal attributes which engender confidence and "followships," has imagination and wisdom; knows, understands and appreciates people and their problems; possesses the necessary training and experience; understands factors which produce wealth and how to control them; recognizes his own limitations and how to "stop-gap" them; understands line-staff organization and function and can make it work; doesn't substitute paternalism for management; must have a burning desire to win.

FIGURING THE TRUE COST—"Be aware of your industry averages and rules of thumb" as to cost, and by all means know your own true cost of doing business, said John Rittman, a member of Arthur Anderson & Co., Atlanta.

The poultrymen have two opportunities to know this true cost, he said—either by learning now the true cost of doing business, or learning what the true cost of doing business was after going out of business.

Mr. Rittman went on to report that the poultrymen should forget the idea that the industry is different from all others and the principles of costing do not apply to them before

they have to face the facts of going out of business.

"The poultryman today is involved in big business decisions brought about by the transition from sideline operations," he said.

"If you know the current cost of your operation, you will be in a better position to control your production level and to obtain the financing so necessary to your business," he added. "Yes, the bankers have expressed the desire for more accurate and adequate information from you, and these requirements will continue to tighten."

Mr. Rittman listed the following questions that "cannot be correctly answered without accurate current cost records:

"1. Which of your processes are profitable and which ones are unprofitable? Why?

"2. What type of operation is best for you from your cost and profit standpoint?

"3. As a dealer or operator, do you know which of your individual contract growers is the most efficient?

"4. Are you using the correct basis for compensating your contract growers?

"5. Do you know the break even point in your business?

"6. What changes should you make in your operations to meet changed conditions?"

FACTS TO RECOGNIZE—A review of accomplishments under the Poultry Products Inspection Act during its first year of full operation was presented by Hermon I. Miller, director of the poultry division, Agricultural Marketing Service.

A total of 564 slaughtering and eviscerating plants and 257 plants preparing convenience foods were operating under inspection by the end of 1959, according to the director. During the year, about 850 new inspectors were recruited, trained and placed in plants operating under the inspection act to bring the total at the end of last year to 1,600.

Mr. Miller recounted some of the problems which have been encountered, and what had been done to overcome them.

"We have been concerned about the level of condemnations in isolated flocks and have taken several steps during the past year to attempt to assist in minimizing these losses," said the director.

After assuring itself of the accuracy of the condemnations, a team, consisting of Agricultural Research Service and poultry division personnel, visited the farms from which condemned poultry had originated, according to Mr. Miller. "In almost every case, one or more of the recommended good husbandry practices had been neglected," said the director.

Mr. Miller stated that progress to help minimize losses is proceeding through the efforts of various poultry organizations, such as Southeastern, the Poultry Division of the Agricultural Marketing Service, Agricultural Research Service and the Federal Extension Service.

He pointed out several procedures which are used by the poultry division to establish and maintain uniform interpretations of the various condemnation criteria among all inspectors.

THE SHAPE OF THINGS TO COME—A man who travels about 300,000 air miles a year said that within 20 years the world will either be entirely Communist-dominated or free.

Dr. John H. Furbay, New York, director of air world education for Trans World Airlines in 26 countries, made the prediction.

"We're in the middle of World War 3," he warned. "It is a war of ideas. Atomic bombs may never be set off, but this war for millions of minds is the largest selling job the world has ever known."

EGG DISCUSSIONS — The commercial program included a discussion of what lies ahead for the commercial egg industry and a report on promotional programs of the Poultry and Egg National Board by Ralph Thomas, DeKalb (Ill.) Agricultural Assn. and president of PENB. Also in this section was a panel discussion of the factors that affect egg prices.

FUTURE EGG PRODUCTION TRENDS—Mr. Thomas listed a number of future egg production trends, including:

There will be a continuance toward contracting for specialized market outlets;

Producer contracts will incorporate more escalator clauses to stimulate individual initiative through profit sharing incentive plans;

Larger contractors will tend to encourage more individual ownership in an effort to distribute risks;

Breeders will produce better birds and feed people will produce better feeds with the key being efficiency of production;

Egg production will continue to become centralized into "egg sheds" which could extend from a community to an entire state or area;

Some of the greatest opportunities may come in finding the right answer to factors affecting the environment in which the bird is kept such as ventilation, light space and equipment as well as in the field of service to customers to assist them in making sound business decisions.

Pointing out that 60% of the eggs are bought by only 10% of the egg handlers, Mr. Thomas expects the retail distributors to continue to cast a great influence on the location of egg production centers. Population centers, cost of production, assembling, processing and transporting will determine the location of the first buyer centers.

Mr. Thomas emphasized the evident need of a united front for increased emphasis in the field of research and development of new egg products plus expanded work in development of an effective program of professional advertising to clear up some of the misinformation on eggs.

Marketing "Starved"

He stated that the $2 billion egg business had "grown to maturity" in the sense of efficient production, while the product development and marketing end of the egg business had been "starved" to death for lack of support. He emphasized the importance of this research-promotion-education phase as a stabilizer for the egg industry. Without emphasis to expand consumption, he predicted that the egg industry can continue to look forward to the same "feast or famine" pattern of business which has characterized the egg industry in the past.

"In growing to maturity, egg production has pushed out into every corner of our land, eliminating egg deficit or import areas and establishing a 'common' nationwide egg market," he said. "For this reason, egg people everywhere dare not be interested in researching, promoting and educating on a national scale. There is no area or market immune to the basic laws of supply and demand today!" he noted.

To help increase egg consumption and expand consumer education work on eggs, Mr. Thomas announced that a qualified home economist would be working on recipe development and publicity release work. He pointed out that this information moves rapidly from the national and regional PENB offices to "Home Town—U.S.A." through key newspapers, national magazines and radio stations.

Hatcherymen, producers, egg handlers and allied industries were lauded for their PENB egg support which yielded a 55% increase in investments for the year 1959. "Over 100,000 egg producers invested in the cent-a-case check off plan. Non-investors were urged to accept their responsibility by joining their own state-PENB 'check-off' program. The goal is one million dollars by Dec. 31, 1961," he said.

Egg people were urged to support the PENB new product development committee by contacting their own state colleges and universities and asking for their help in further extending their efforts in both basic and applied research, development and marketing of new egg products. To the question, how much is being spent to further increase egg production as compared to the amount being spent to develop new egg products and markets, Mr. Thomas said, this question is getting a "hard look" from agricultural and political leaders today. He pointed out that the climate and timing were ideal to step up new egg product development provided that we act now.

Mr. Thomas pointed out that egg people have two choices: "First, they team up with the PENB in all-out support of a sound research and education program to insure the future of our free enterprise business system, or secondly, they surrender to federal controls which ultimately equate all men to a common level and place us one step closer to a socialistic type of government."

TURKEY TALKS—Discussions of production costs, marketing and the future of the industry all were included in this section of the program. Producers' costs on the basis of a cost-controlled program were discussed in one talk, while the necessity of new products and services was stressed in another. Still another speaker looked into the future to forecast trends in the turkey industry.

WHAT THE FUTURE FORECASTS—"The future of the turkey industry looks bright, new programs of coordinated production and marketing will be developed and the opportunities to increase turkey meat consumption are great," were the predictions made by D. D. Moyer, turkey specialist for the A. E. Staley Manufacturing Co., Decatur, Ill.

Mr. Moyer presented facts and figures on what has determined the production of turkeys in the past and what would determine it in the future. "Before predicting the future trends of the poultry industry," stated Mr. Moyer, "several factors must be followed such as geographic growth patterns, changes in turkey feed-price ratio and the influence on volume of turkeys raised."

Based on the feed-price ratio factor, the southeastern states are in a favorable position to compete for turkey production. This, coupled with a mild climate, lower priced land and nearness to market, offers important advantages, which should bring about greater production of turkeys in the southern states, the specialist reported.

He further emphasized that the midwestern states have taken the lead in production and will maintain this lead for the immediate future because of an apparent open-minded attitude. Also, capital has been available to provide adequate equipment to reduce production cost.

How will turkeys be produced in the future? The important areas in production will move toward a high degree of coordination among all phases of the industry from breeding stock to finished products in the retail stores, he said. Mr. Moyer predicted that this coordination program would be of the three following types:

(1) Factory-type of coordination or integration which permits closer control by the operator but involves larger amounts of capital. This type is more risky.

(2) Contract operations or community effort. It necessitates coordination of production phases and production with the marketing phase to be successful. It is less risky and requires less capital.

(3) Individuals coordinating their production and marketing. This will develop on a larger volume operation to improve efficiency.

In spite of the lower price level that exists today and the greater capital required for expansion, he predicted a 2-6% production increase per year for the immediate future. The percentage increase would depend upon the improvement in production efficiency, if industry can lower production cost faster causing market prices to decline and in finding new ways of merchandising turkeys.

DOLLARS AND SENSE IN MARKETING — "The turkey industry must decide with finality in 1960 if it is to give the housewife a product in the form that she wants, or if it will continue to market turkey in the form most convenient to it." With this statement, John McDade, management consultant from Willmar, Minn., challenged the turkey industry to "face the facts."

Offering a variety of products is a must if the industry is to keep pace with the population increase, he said. These products should be favorably endowed with a combination of characteristics, mainly quality, convenience, attractiveness and price. These standards must be met before there will be any "dollars and sense in marketing," he said.

How to pick a winner of new ideas and the cost of providing specialty packs also was discussed. Experience has taught some processors who have been brave enough to venture into new methods, that profit potentials do exist, he said.

"Not only are new cuts, packs and methods of merchandising needed, but also different cooking procedures to maintain flavor will help in maintaining the turkey meat as a favorite," Mr. McDade added.

BROILER DISCUSSIONS — An abstract presentation from the eighth biennial grocery store study of 43 corporate food chains was presented to build a case for the national or public brand by one speaker. Other talks were on factors that affect broiler prices and production factors in condemnation losses.

THE BIG CHALLENGE IN FOOD MARKETING — How to build a strong "retail" and "brand" franchise for a product despite the growing use of the private label and the concentration of grocery sales into fewer, more powerful hands is today's big challenge in food marketing, said George Beveridge, southern manager of This Week magazine.

He backed up his statement with facts and figures gleaned from This Week's eighth biennial grocery study which included 43 corporate chains with store locations in the U.S. counties which accounted for over 95% of the nation's retail grocery sales.

The increased tempo of competition and the transition from a seller's to a buyer's market has created many problems in food distribution, Mr. Beveridge said. He cited, among the major ones, promotion, "out of stock," shelf space, medium and large sizes, pricing and new products.

"New products could be one of the most important areas of your entire operation," he said. "Yet the rate of mortality is simply fantastic. Only one out of ten new products succeeds."

Mr. Beveridge noted that trade attitudes toward a product play an important role.

Because food distributors need greater profits to fight rising margins, Mr. Beveridge said, "the battle of the brands has become the hottest thing in the food field today." Reasons given by the chains for stocking private brands, he said, are that they have to have volume sales and be able to offer quality equal to the national brands at savings to their customers and do it profitably.

In building a case for the national or public brand, Mr. Beveridge listed as advantages faster turnover ("a vitally important factor in producing net profit"); greater uniformity; controlled quality, and the innovation of new products ("the lifeblood of the food business").

Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penn.	Ind.	Ill.	Mo.	Del.	Md.
November 21	912	486	760	583	92	629	1,664	1,838
November 28	931	426	664	524	92	648	1,790	1,908
December 5	912	420	600	576	77	676	1,904	2,053
December 12	891	378	847	628	106	695	1,747	2,234
December 19	1,012	404	664	571	101	644	1,840	2,170
December 26	930	388	663	637	75	611	1,530	2,140
January 2	1,093	380	913	664	102	657	1,818	2,335
January 9	1,116	451	897	809	130	745	1,940	2,428
January 16	1,045	424	663	722	100	848	2,049	2,230
January 23	1,054	357	656	665	94	885	1,884	2,245

Week ending	Va.	W. Va.	N.C.	S.C.	Ga.	Fla.	Ala.	Miss.
November 21	1,017	402	2,284	317	5,173	148	2,674	1,791
November 28	976	414	2,173	324	5,402	120	2,587	1,903
December 5	1,024	401	2,354	328	5,381	148	2,772	2,030
December 12	1,056	346	2,506	348	5,506	177	2,711	1,944
December 19	987	368	2,597	348	5,442	198	2,770	1,996
December 26	610	346	2,275	314	4,824	165	2,641	1,843
January 2	1,112	440	2,956	354	5,983	190	2,862	2,267
January 9	1,034	436	2,866	348	6,181	234	3,019	2,160
January 16	1,086	471	2,847	321	6,319	200	3,153	2,207
January 23	1,123	539	2,787	338	6,456	209	3,277	2,149

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1959-60	Total 22 areas 1958-59
November 21	2,813	302	1,607	282	140	1,097	26,990	28,426
November 28	2,962	292	1,646	270	130	1,096	27,278	28,817
December 5	3,192	358	1,771	282	204	1,142	28,605	29,306
December 12	3,140	290	1,725	319	171	960	28,725	29,967
December 19	3,021	319	1,748	281	188	1,042	28,911	30,579
December 26	2,770	235	1,409	214	165	1,011	25,796	29,019
January 2	3,334	355	1,759	294	255	1,046	31,169	31,704
January 9	3,261	425	2,043	355	233	1,112	32,223	30,827
January 16	3,450	428	2,133	320	254	1,033	32,303	29,761
January 23	3,484	372	2,112	311	260	1,151	32,408	30,661

INDIANA

(Continued from page 6)

third of the Indiana dealers are now making a direct storage charge.

"Whether the direct charge is applied or not it should be recognized that in rendering the storage service substantial costs are incurred by the dealer," Dr. Farris noted.

Drying Facilities Needed

The widespread use of grain banks has highlighted also the need for an increase in grain drying facilities, Dr. Farris said. The increased use of corn combines and picker shellers speeds the corn harvest and results in the delivery of corn to the feed mill at relatively high moisture contents. The need for drying facilities to maintain this corn in adequate storage is thus apparent, he said, and much of this drying will continue to take place at the local mill.

Dr. Farris reported that most dealers make a charge for drying, usually 5¢ bu. with added charges for drying at about 20% moisture. A practice which is common in the handling of high moisture corn is to discount by a standard moisture discount schedule to an agreed upon level and then apply a drying charge. The customer is credited with the resultant amount of dry corn (or its equivalent value) and charged the amount of the drying. In instances where the customer is willing to take corn of higher moisture in his feed, Dr. Farris explained, he is credited by the same scale as was used to discount.

"Customers are generally satisfied with this arrangement in order to get the high moisture corn handled," he observed.

Bulk delivery of grain bank feed allows the customer to save considerable time on his entire feeding operations, according to Dr. Farris. It cuts both unloading time and feeding time. Most dealers make a direct charge for this delivery service. The most usual charge is $1@2 ton with some variations on size of load and distance hauled.

"If no direct charge is made," Dr. Farris said, "it should be recognized by both dealer and customer that overhead costs will be increased and must eventually be paid by customers in higher costs of other goods or services, or by a reduction in operating margins."

FEED ADDITIVES FOR BEEF CATTLE—The present status of feed additives for beef cattle was summarized by Dr. W. M. Beeson, department of animal science, Purdue University, in the following statements:

Hormones—In dry lot on high energy diets, either feeding 10 mg. diethylstilbestrol (DES) daily or implanting with 36 mg. of DES will give the same response in gain, feed efficiency, carcass quality and general appearance in steers.

"Gain stimulation and feed savings from stilbestrol are more pronounced in fattening rations than growing rations. Steers fed grain on pasture respond much better to implants (24 mg.) than oral feeding of DES. There is usually very little beneficial effect from feeding stilbestrol on pasture.

"In general, heifers do not respond as favorably to stilbestrol as steers. The effect of oral feeding and implanting is the same from the standpoint of gain and feed efficiency, but occasionally prolapse of the vagina is encountered when heifers are implanted with stilbestrol (36 mg.).

"Dienestrol and hexestrol have been shown to be equally effective to stilbestrol in improving gains and feed efficiency in steers when fed at a level of 10 mg. daily.

"Progesterone - estradiol implants give about the same degree of increased gain and feed efficiency as implanting or oral feeding of stilbestrol. Implanting heifers with estradiol-testosterone has given the same results as stilbestrol."

"Goitrogen—Tapazole is a powerful antithyroid agent that has a short term effect on cattle. Some improvement in gain and feed efficiency has been noted for short periods (56 days). However, results recently reported from Illinois and Missouri have shown no over-all beneficial effect by feeding Tapazole.

"Antibiotics—To date, the two most effective antibiotics for beef cattle are Aureomycin and Terramycin. Antibiotics significantly improve carcass grade when fed in conjunction with stilbestrol. Antibiotic response is greatest on high roughage diets and the least on high energy diets. The response to antibiotics varies with the type of feed, feedlot conditions and disease level of the cattle.

"Usually, the continuous feeding of 70-80 mg. of either Aureomycin or Terramycin per head daily will increase the profits from cattle in a feedlot. Feeding high levels (350-500 mg.) of either Aureomycin or Terramycin when cattle arrive on the farm will tend to reduce the severity of shipping fever.

"Tranquilizers—Recent research reports from several experiment stations have indicated that the feeding of tranquilizers such as hydroxyzine, trifluomeprazine, reserpine and rauwolfia exert little or no beneficial effect on gain, feed efficiency or carcass quality.

"Enzymes—In general, the results reported to date on the use of enzymes as a feed additive for beef cattle are conflicting and inconsistent. Three experiments recently completed at Purdue have shown no significant effect on gain, feed efficiency or carcass quality by feeding Agrozyme, Diazyme, HT-550F and Zymo-Pabst to steers full-fed on low-moisture corn.

"Chemobiotic—Under western feeding conditions in Montana and Washington, a significant stimulation has been obtained by feeding 1-2 gm. of tetra alkylammonium stearate (dynafac) per steer daily. In contrast, a majority of the midwestern experiments have shown no significant influence on gain, feed efficiency or carcass quality by feeding dynafac to either steers or heifers.

"Ethanol (ethyl alcohol)—Basic research and several feeding trials have indicated no special benefits from the feeding of limited amounts of ethanol to beef cattle. Low levels of ethyl alcohol serve essentially as a source of energy and can be replaced with an iso-caloric amount of starch.

"Live Rumen Cultures—Several tests have been conducted on various types of live rumen cultures as a feed additive to beef cattle rations. Research data reported to date has indicated that the supplementation of a ration with dried rumen concentrates (4 billion live cells per gram) will not improve gain, feed efficiency or digestibility of nutrients for beef cattle."

WASHINGTON GOINGS - ON — Commenting on some of the proposed changes in the provisions of the Uniform Grain Storage Agreement, Madison Clement, Waco, Texas, president, Grain & Feed Dealers National Assn., said it was his personal opinion that the grain trade could not agree to accepting an unknown hazard on a commodity that belonged to someone else. This statement referred to a proposed change which he said would make warehousemen not only liable for the grade of government grain at the time it was taken into their warehouses but also for any changes that might be made in rules as set forth by the Food and Drug Administration.

"Ever so often we hear that FDA is going into a corn sanitation program in spite of the fact that a very minute part of the corn raised in this country ever goes into human consumption," he said. "This would just add another hazard with which we could not live."

Mr. Clement mentioned another change proposed by the Commodity Credit Corp. which would allow Commodity to sell out warehouse receipts to a third-party purchaser "without any consideration to the warehousemen from which the grain was to move." He said, "This could, in effect, mean that CCC could go back into the merchandising of grain when the price justified its moving into commercial channels."

OFFICERS' REPORTS—L. A. Garner, president of the Indiana association, reported that he and other officers and directors of the group were perturbed by the publication last year of a report, "Variations in Corn Prices Among Elevators in an Indiana County," authored by David A. Storey and Paul L. Farris, Purdue University economists.

"This report covered only one county," Mr. Garner said. "It was not representative of the state even though it was compiled to be mailed to farmers and others over the entire state.

"No one knows better than you and I that at times elevators will get into a price battle, which to me is ridiculous, but it does happen. No one wins in a case like this."

Mr. Garner said he had "no quarrel" with Mr. Storey, Mr. Farris and Purdue, but added, "My bone of contention is that if a check is made of any town or county the news releases should be confined to that locality, and if a statewide checkup or survey is made, then by all means release it over the state. In other words, don't punish the entire class just because one pupil is unruly."

Fred K. Sale, executive secretary, reported that funds donated by members to help pay expenses of negotiating a new Uniform Grain Storage Agreement with Commodity Credit Corp. were to be turned over to the Grain & Feed Dealers National Assn.

He said that one of the bills passed by the Indiana legislature during 1959 was a feed law amendment which included the contract feeder.

RESOLUTIONS — The Indiana Grain & Feed Dealers Assn. adopted resolutions:

1. Favoring a policy of using all established channels of the grain and feed trade in handling, storing and merchandising surplus grain and grain products.

2. Favoring greater appropriations to USDA for use in finding new industrial uses and new markets for grain surplus crops.

3. In favor of continuing operation with the Food & Drug Administration and Purdue University to improve sanitation conditions under which grain is received, handled and stored, and in favor of national and state health authorities keeping the association informed of proposed changes in usage or administration of chemicals and feed additives so that these changes can be brought promptly to the attention of the grain and feed trade.

4. Favoring closing of the "patronage dividend loophole" in tax laws and repealing of provisions of the Internal Revenue Code giving total or partial tax exemption to cooperative corporations.

5. In favor of placing rail rates on "a more uniform and equitable basis" in competitive areas.

6. Opposing extension of coverage of the Fair Labor Standards Act to employees of the grain and feed industry.

7. Favoring the hundredweight basis of grading and trading over the bushel basis.

8. Favoring continuation of the present Uniform Grain Storage Agreements with Commodity Credit Corp.

Feed Ingredient Suppliers to Meet

SUN VALLEY, IDAHO — A Feed Procurement Conference will be held for suppliers of feed ingredients Feb. 10-13 at the Challenger Inn in Sun Valley.

Papers pertaining to feed merchandising will be read. Round table discussion groups will be formed to talk over common problems.

George LaBudde, LaBudde Feed and Grain Co., Milwaukee, president of the group, urges those attending to get reservations in early for accommodations.

Buyers of various feed ingredients also are welcome to attend, Mr. LaBudde says. Further details may be obtained from Mr. LaBudde by writing to his firm's office at 741 N. Milwaukee St., Milwaukee 2.

Ups and Downs Noted In Soy Meal Futures

MEMPHIS, TENN.—Prices of oilseed meal futures were irregular on the Memphis Board of Trade during the past week, compared with one week earlier.

Slow demand for the cash article figured in the lower prices. Advances were a result of a sympathetic run-up part of the period with soybeans due to overdiscounted loan figures, traders said, along with a reduced soybean crush for December reported Jan. 26. Reduced oilseed meal stocks also boosted some prices.

Most dealers reported that there was no great demand for cash oilseed meal. But they are optimistic, with poultry reports beginning to look better. Cottonseed oil meal demand has been slow since export interest dropped off.

Mixed feed business has been less than anticipated for this time of the year.

MARKETS

(Continued from page 2)

promise of a prolonged spell of winter weather, but temperatures moderated abruptly this week. This warmer weather has been very disappointing to area feed manufacturers, who have hoped for really cold weather of sufficient duration to offset the increasing resistance to what many farmers term excessively high prices for commercial mixed feeds.

As a result, formula feed prices remained virtually static this week. Manufacturers reported that sales were "draggy" and there was no indication they would improve soon.

This situation also was reflected in area stockyards and wholesale markets, where receipts were ample to meet all requirements of the lethargic retail markets.

Because of the depressing factors, area feed mills generally slowed operating schedules to five days. Apparently, only a week or more of zero temperatures and deep snow will improve the current situation.

Mountain States

Formula feed business in the Mountain states this week held up pretty well. Sales volumes were about the same as a week ago and off just a little bit from the peak, which seems to have been November and December in this area.

Cattle feeds have been providing almost all of the demand for dealers. There are a large number of cattle in feedlots throughout this area. The steady increase of cold weather is another factor.

Pacific Northwest

Demand for feed ingredients slackened at Portland and Seattle during the week as weather conditions moderated after the previous week's snow storm in most sections of Oregon, Washington and Idaho.

Mixers reported that formula feed trading averaged good, but the current sales volume was down following expanded activity in cattle and dairy feed demand the previous period.

Feedstuffs quotations followed a mixed trend with moderate fluctuations from last week's close. Supplies of most items were adequate for the limited trade call.

Cottonseed meal values were quoted within a wide range and some prices were $3 ton higher than at the previous week's close. Soybean meal listings closed $1 ton lower, while wheat millfeed tags pushed 50¢ ton higher.

Feed grain values weakened under the influence of a $1 ton decline for barley and corn. Oats and milo appeared steady and unchanged.

Pacific Northwest alfalfa markets maintained a steady to firm tone in the face of limited supplies of good quality material and fairly heavy feeding requirements. Trading was on the light side this week due in part to weather conditions which hampered movement in a number of producing districts.

Purchasing Agent For Allied Mills Dies

FORT WORTH, TEXAS — George S. Newell, Fort Worth, 1958 president of the Memphis Hay & Grain Assn., died here Jan. 25.

Mr. Newell, 46, had been seriously ill several months after undergoing a brain tumor operation.

He moved to Fort Worth in October, 1958, when he was named purchasing agent of Allied Mills, Inc., here. He had held a similar post at the firm's Memphis mill.

Born in Omaha, Neb., Mr. Newell lived in St. Louis prior to moving to Memphis in 1948. He had been with Cargill, Inc., about 20 years before joining Allied Mills in 1953.

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Oregon Plans Animal Industry Conference

CORVALLIS, ORE.—The 18th annual Oregon Animal Industry Conference, co-sponsored by the Oregon Feed & Seed Dealers Assn. and Oregon State College, will open for a two day showing Feb. 4-5 in Withycombe Hall, Oregon State College.

Randall Cook, of the feed association and Dr. Jess Parker of the college staff, are co-chairmen.

Principal speakers will be Dr. H. T. Peeler, International Minerals & Chemical Corp., Chicago; Dr. N. L. Jacobson, Iowa State University, and Dr. Hans Lineweaver, U.S. Department of Agriculture, Albany, Cal.

Speakers and their topics scheduled in the morning Feb. 4 include the following: Dr. Hans Lineweaver, USDA, Albany, Cal., "Relation of Feed to Flavor of Poultry and Eggs"; B. F. McGill, Oregon State College, "Pelleted Dairy Rations," and Dr. H. T. Peeler, International Minerals, "Phosphates."

The afternoon program will include: Dr. N. L. Jacobson, Iowa State University, "Newer Aspects of Calf Nutrition," and a film on "The Open Door to Greater Dairy Profits."

Oregon State College speakers to give research briefs include: Dr. D. C. England, "Pelleted Feeds for Swine"; Dr. D. C. Church, "High Roughage Pellets for Lambs"; Dr. P. H. Weswig, "Carotene Stability in Forages"; J. A. Harper, "Aortic Aneurisms in Turkeys"; W. H. McCluskey, "Feeder and Water Space for Broilers," and Dr. P. E. Bernier, "Breeding and Nutrition of Midget Layers."

Dr. F. G. Hueter, Oregon State College, will discuss "Ruminology—A New Approach to Feed Evaluation."

Fenn Emmerson, president, Oregon Feed & Seed Dealers Assn., will be master of ceremonies at the buffet banquet, and Prof. Max Wales, University of Oregon School of Journalism, will be the main speaker.

The Feb. 5 program will include: Dr. N. L. Jacobson, Iowa State University, "Additives in Dairy Rations"; Dr. P. O. Ritcher, Oregon State College, "Agriculture Experiences Abroad"; Dr. H. T. Peeler, International Minerals, "Calcium and Relation to Trade Minerals"; Dr. Hans Lineweaver, USDA, Albany, Cal., "Research on Feather Meal," and Dr. G. H. Arscott, Oregon State College, "Poultry Nutrition Research."

Participants in a panel discussion will be Dr. Don Mishler, moderator; Dr. Jacobson; Dr. Arscott; Dr. H. T. Peeler, and Dr. Lineweaver.

NEW POULTRY FIRM

BURLEY, IDAHO—Kenny's Poultry, Inc., has filed articles of incorporation, listing $5,000 capitalization and Clayton E. and Betty E. Johnson and Harley W. J. King, all of Walnut Creek, Cal., as incorporators.

NATIONAL NEWS

National Alfalfa Dehydrating & Milling Co. Presents New Designs in Product Packaging

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The new nam... stantly ident...

A higher energy, higher efficiency feed ingredient. Guaranteed at delivery: 18% protein, 125,000 I.U.'s of Vitamin A/lb., and 23% maximum fibre.

The highest quality dehydrated alfalfa product, for extra-fast gains and/or top egg production. Guaranteed at delivery: 20% protein, 150,000 I.U.'s of Vitamin A/lb., and 20% maximum fibre.

For diversified feeds. Guaranteed at delivery: 17% protein, 100,000 I.U.'s of Vitamin A/lb., and 27% maximum fibre.

To make your feeds recognized for the highest quality—specify "NATIONAL" Dehydrated Alfalfa ingredient.

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